Map Intelligence Client

User Manual for Oracle Business Intelligence Enterprise Edition

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INTRODUCTION

PURPOSE

This manual provides information about the Map Intelligence Client (**MI Client**). It explains the MI Client features and options and contains the concepts, processes, procedures and examples that you need to use this software.

AUDIENCE

The effective use of Map Intelligence involves a number of separate processes which can be performed by different user groups. The user groups involved are described below.

LAYER DESIGNERS

Layer designers are responsible for configuring the Map Intelligence Map Intelligence layers that are displayed on the Mapping Viewer. Layer Designers are also responsible for configuring the settings for the Map Intelligence Server as well as the properties of the underlying map to be used for the analysis. This user group should have a firm understanding of the spatial analysis required.

Layer designers are advised to read all sections of this manual.

END USERS

End Users are users who want to view the configured layers on a map. Their roles include launching the Mapping Viewer to generate spatial representations of the data.

End Users are advised to read the separate *Mapping Viewer User Manual*.

SERVER ADMINISTRATORS

Another type of user exists that is responsible for the installation and management of the Map Intelligence Server. These users should be familiar with the organization's mapping server (hereinafter referred to as GIS Provider). Server Administrators are advised to read the separate *Server Installation Guide and the Server and Administration Tools*.

CONVENTIONS

The following table shows the conventions that are used in this document.

Item	Meaning
➤	An arrow indicates the beginning of procedures consisting of sequential steps or one-step procedures.
< >	In examples, < > indicate that the enclosed elements are optional or they are instances of code to be replaced by the user with applicable information.
Bold	Bold in procedural steps highlights user interface elements on which the user must perform actions.
`Example text`	Courier font indicates that the example test is code or syntax.
`Courier italics`	Courier italic text indicates a variable field in command syntax. Substitute a value in place of the variable shown in Courier italics.
`n,x`	Italic *n stands for a variable number; italic x can stand for a variable number or a letter.*
Mouse Orientation	This document provides examples and procedures using a right-handed mouse. If you use a left-handed mouse, adjust the procedures accordingly.
	The Note icon indicates additional information relating to the topic.
	The Tip icon suggests an alternative or shortcut procedure.

PREREQUISITES

Please refer to your *MI Client for OBIEE Installation Guide* for a comprehensive list of prerequisites

In addition to the **MI Client for OBIEE** Prerequisites, the **Map Intelligence Server** needs to be installed and configured in order to make the relevant maps, colors and images available for your analysis. The Map Intelligence Server requires that a suitable mapping server be installed. The installation of the Map Intelligence Server and mapping server are beyond the scope of this manual.

For instructions on how to install and configure the Map Server refer to the Map Intelligence *Server Installation Guide and the Map Intelligence Server and Administration Tools Guide*.

CONCEPTS

WHAT IS MAP INTELLIGENCE?

Map Intelligence extends the "no programming" paradigm into mapping and merges location and spatial analytics into enterprise decision support and Business Intelligence applications.

Map Intelligence enables bi-directional analysis between data visualized on maps and other more traditional representations such as tables of data, charts and reports. In this environment a user can easily discover previously hidden information and data relationships.

Map Intelligence reduces the time needed to develop the applications from weeks and months to days and hours. In many cases organizations have given up before solving the technical challenges that Map Intelligence solves.

Using web services from the vast range of online, statistical and business information, an organization's in-house data can be quickly, easily and dynamically augmented and enriched with geographical and satellite imagery. Available services include census, demographic and health data, climatic, hydrological and geological data.

Map Intelligence has two principal components:

THE MAP INTELLIGENCE CLIENT FOR OBIEE

The *Map Intelligence Client for OBIEE* includes a number of configuration screens that enable you to design your mapping application. Using the *MI Client* you select the underlying map you want to use, specify the 'look and feel' and build the different *Map Intelligence* layers to be used in your analysis (see Layer Types). Once this has been done, your application is finished and in operation the MI Client sends a request to the *Map Intelligence* Server to display your application in a web browser.

THE MAP INTELLIGENCE SERVER AND BROWSER MAPPING VIEWER

The *Map Intelligence* Server is the powerhouse behind the mapping application you designed using the Client. It processes all the information sent from the Client to produce your application which you view and interact with in the browser Mapping Viewer (see What is a Mapping Viewer?). The *Map Intelligence* Server is supplied with a number of administration tools that include license administration, global default settings for the 'look and feel' and customization of various applications features such as *pop-ups*.

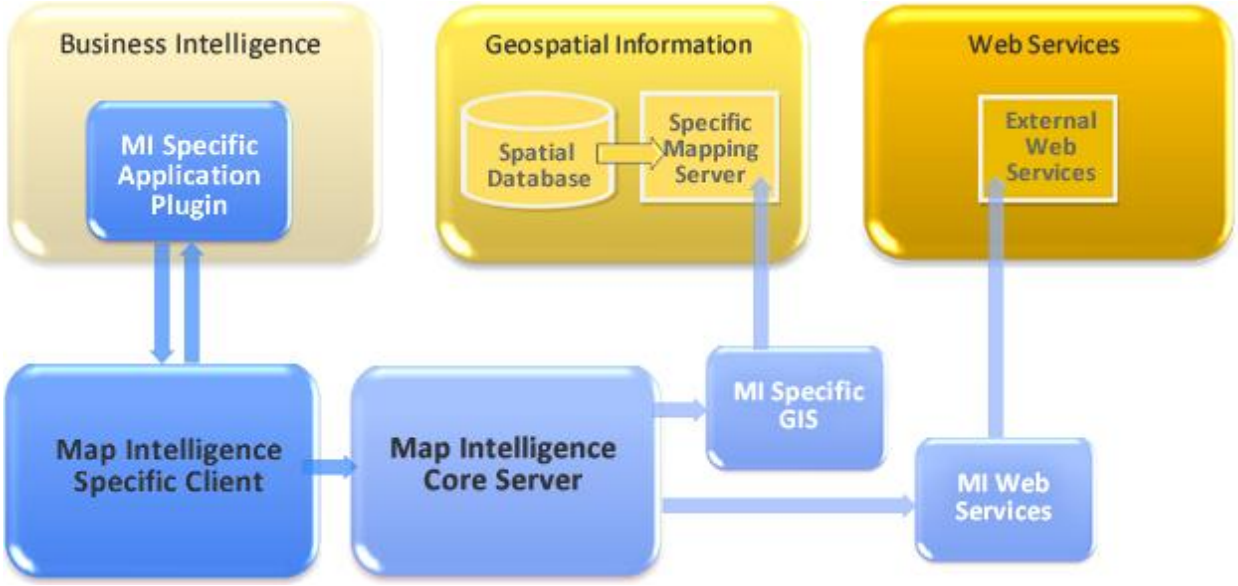


Figure 1. The Map Intelligence Platform.

WHAT IS A LAYER?

Maps are built with layers. Each layer holds characteristics that may be of interest to End Users. Layers contain features of the map such as streets, parks, postal districts, cities, radio towers, rivers and so on. Each map layer sits on top of another layer, e.g. a country layer may sit all the way at the bottom with street layers sitting right at the top.

Layers can also be created dynamically from data found in external sources. Map Intelligence is capable of generating a variety of layer types to aid analysis.

In this manual, layers that reside as part of the mapping environment are referred to as **built-in layers**. Layers created dynamically from external data sources including your report data are known as **Map Intelligence layers.**

LAYER TYPES

The following layers can be created and configured using Map Intelligence:

POINT LAYERS

Point Layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

Figure 2: The Mapping Viewer displaying a Point layer. The points, represented by colored circles, indicate the location of fast food outlets in the Sydney area.

RELATIONSHIP LAYERS

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points which fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as defined by the Layer Designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (e.g. houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

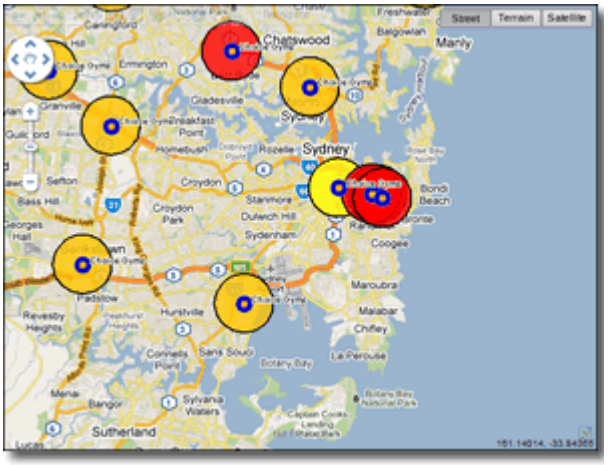


Figure 3: The Mapping Viewer displaying a Radius Relationship layer. The small blue circles represent gyms. Around each gym is a 2km radius colored according to the number of fast food outlets offering a low fat menu. Yellow Circles indicate there are more than 5 outlets, orange circles between 1 and 5 and red circles indicate there are no outlets.

Region Relationship layers corresponds to a map area of any shape that is solely geographical in its definition, and is not generated by Map Intelligence. Examples would be suburbs, zip / postal codes, local government areas, or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (e.g. a sale or an accident) physically belongs to by doing a spatial calculation.

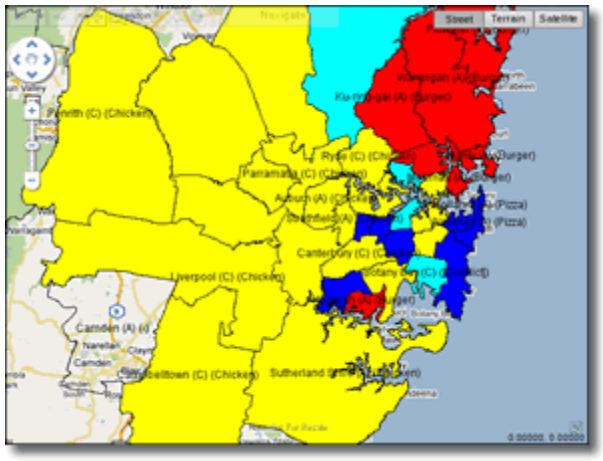


Figure 4: The Mapping Viewer displaying a Region Relationship layer. Local Government Areas of Sydney are color-coded according to the most common type of fast food outlets in each area. Yellow areas show chicken outlets are the most common, red areas burger and blue areas pizza.

AREA GROUP LAYER

Area Group layers also correspond to existing areas on a map. As for Region Relationship layers, the displayed theme is based on data attribute values, but in this case no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

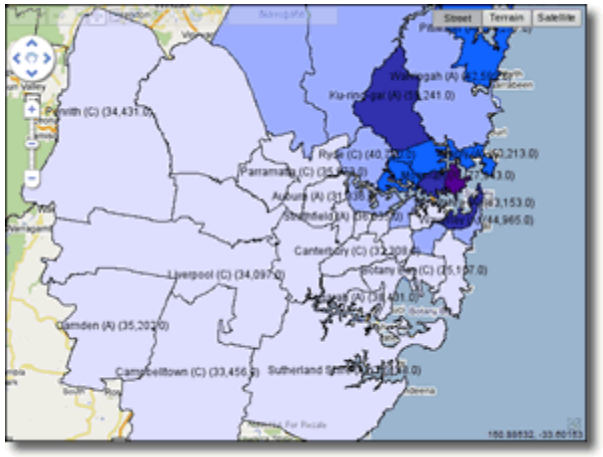


Figure 5: The Mapping Viewer displaying an Area Group layer. The Local Government Areas of Sydney have been color-coded according to the average household income. The darker the area the higher the income.

Like built-in map layers, Map Intelligence layers also have a specific order in which they are placed on the map. **Point layers** are placed on top of **Radius Relationship layers**, which in turn sit on top of the built-in map layers. **Region Relationship** and **Area Group layers** shade existing built-in layers.

WHAT IS A MAPPING VIEWER?

The Mapping Viewer displays the configured Map Intelligence layers overlaid on a specified map. The Mapping Viewer also provides a number of controls and features that allow you to navigate around the map or to change the theme displayed on the map. A number of tools are also available from the Mapping Viewer that allow you to perform high-level analysis.

INTEGRATE MAP INTELLIGENCE CLIENT TO OBIEE

ACCESSING MAPPING VIEWER IN OBIEE DASHBOARD

To embed the map to the OBIEE dashboard, a custom code can be placed in the Narrative View of the Oracle Analysis. Custom code can be place in the narrative view of a specific Analysis or in a template Analysis. The advantage of creating a template Analysis is that you only have to create and place the custom code once and it can be embedded to any dashboard page, regardless of the query or Analysis that you would like to be map-enabled.

ANALYSIS SPECIFIC

This is a static way of embedding map to a specific Oracle Analysis. The Analysis' Criteria will is the only data source to be map enabled.

To configure the Narrative View of a specific Analysis

1. From the *Oracle Catalog* page, select the **Analysis** to be map enabled.

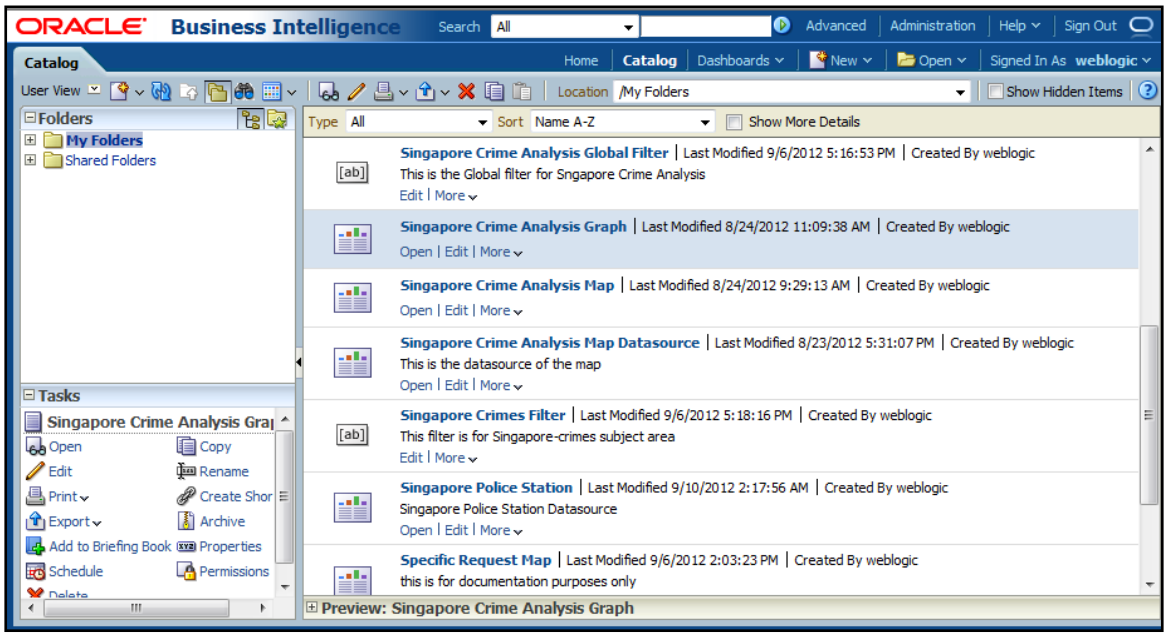


Figure 6. Oracle Catalog page.

Note

- The **Analysis** must have a filter on its **Criteria** to perform the round trip filter feature of the *MI Client for OBIEE*.
- The operator **Analysis** filter should be **is prompted**.

2. Click the **Edit** button. The *Analysis Editor* page displays.

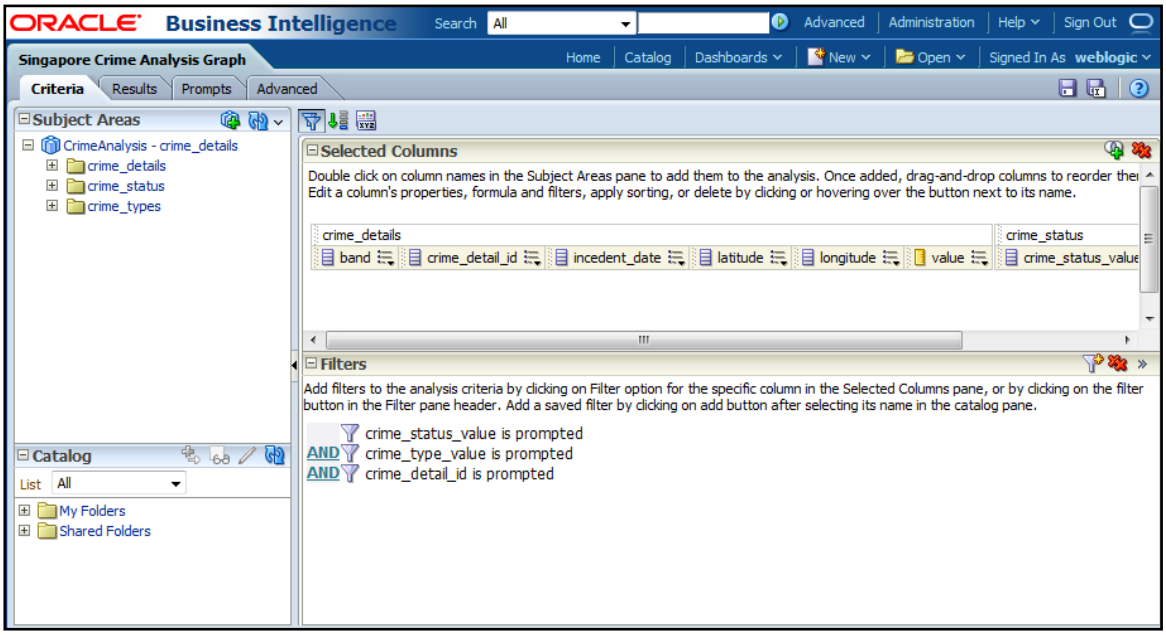


Figure 7. Analysis Editor page - Criteria tab.

3. Click **Results** tab. The *Result* page displays.

4. Click **Add View** dropdown then **Other Views** then select **Narrative**.

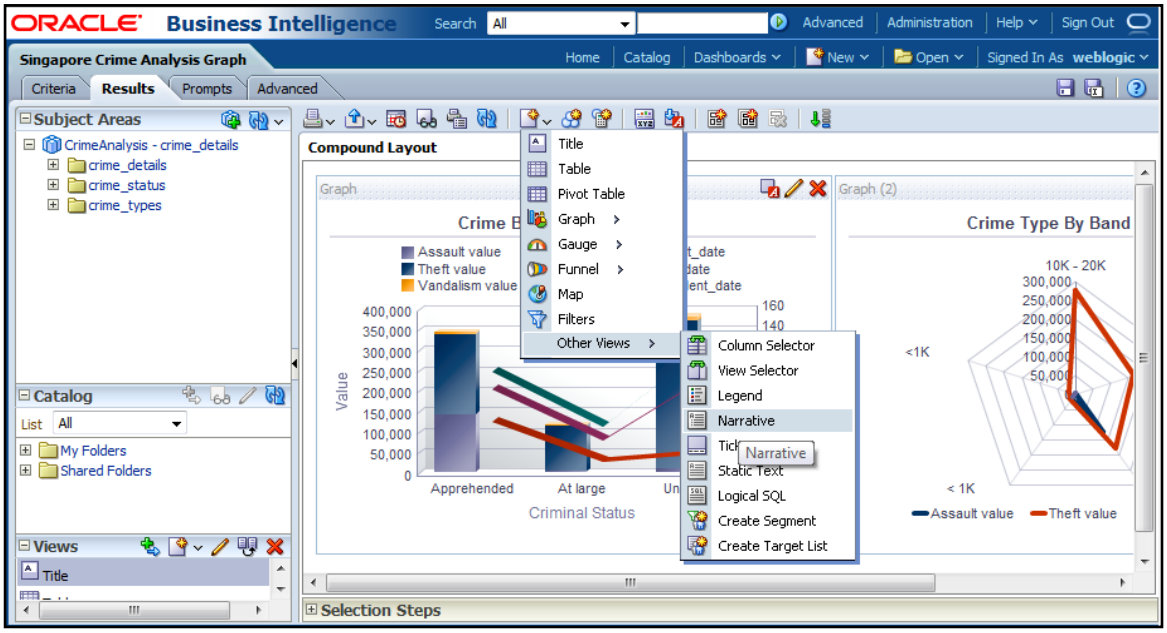


Figure 8. Result page - Add Narrative View.

Note

IF a *Narrative View* already exist and you want to modify or put the custom code there, click the **Edit View** button of the *Narrative View* then proceed to **step 6**.

5. Click the **Edit View** button of the *Narrative View*.

6. Place the custom code(see Appendix D) in the **Postfix** workspace then enable the **Contain HTML Markup** checkbox.

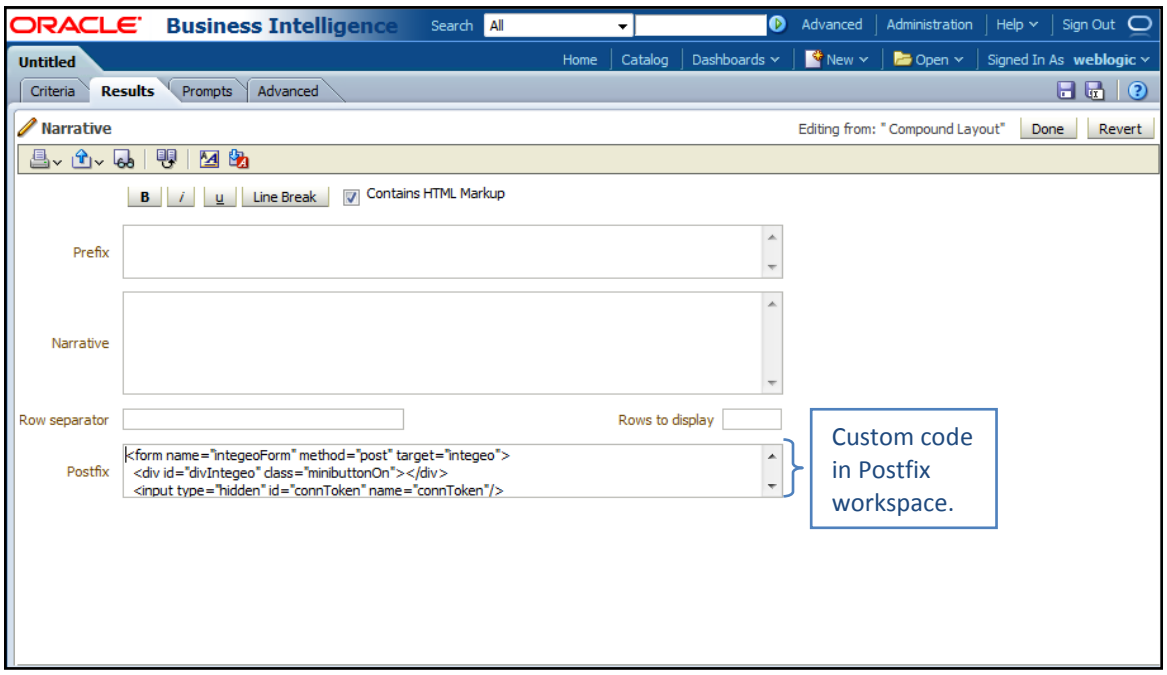


Figure 9. Results Page – Narrative View Editor for a Specific Request.

7. Click **Done** button. *Compound Layout* view displays in the *Results* page.

8. Save the **Analysis** by clicking the **Save Analysis** icon. Click the **Catalog** menu. The *Catalog* page displays.

9. Click the **Edit** link of the Dashboard where the **Analysis** will be embedded. The *Dashboard Editor* page displays.

10. Drag and drop the **Analysis** to the *Dashboard Editor* page.

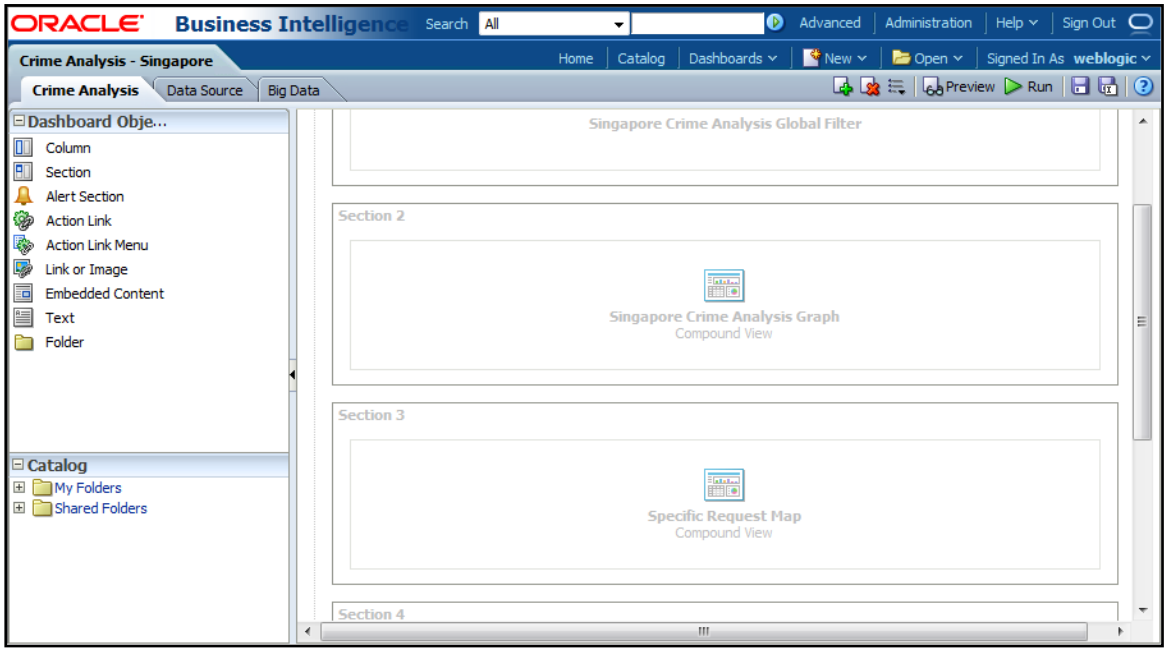


Figure 10. Dashboard Editor Page – Narrative View for a Specific Request.

11. Click **Save** button to save the changes on the Dashboard. Then hit the **Run** icon.

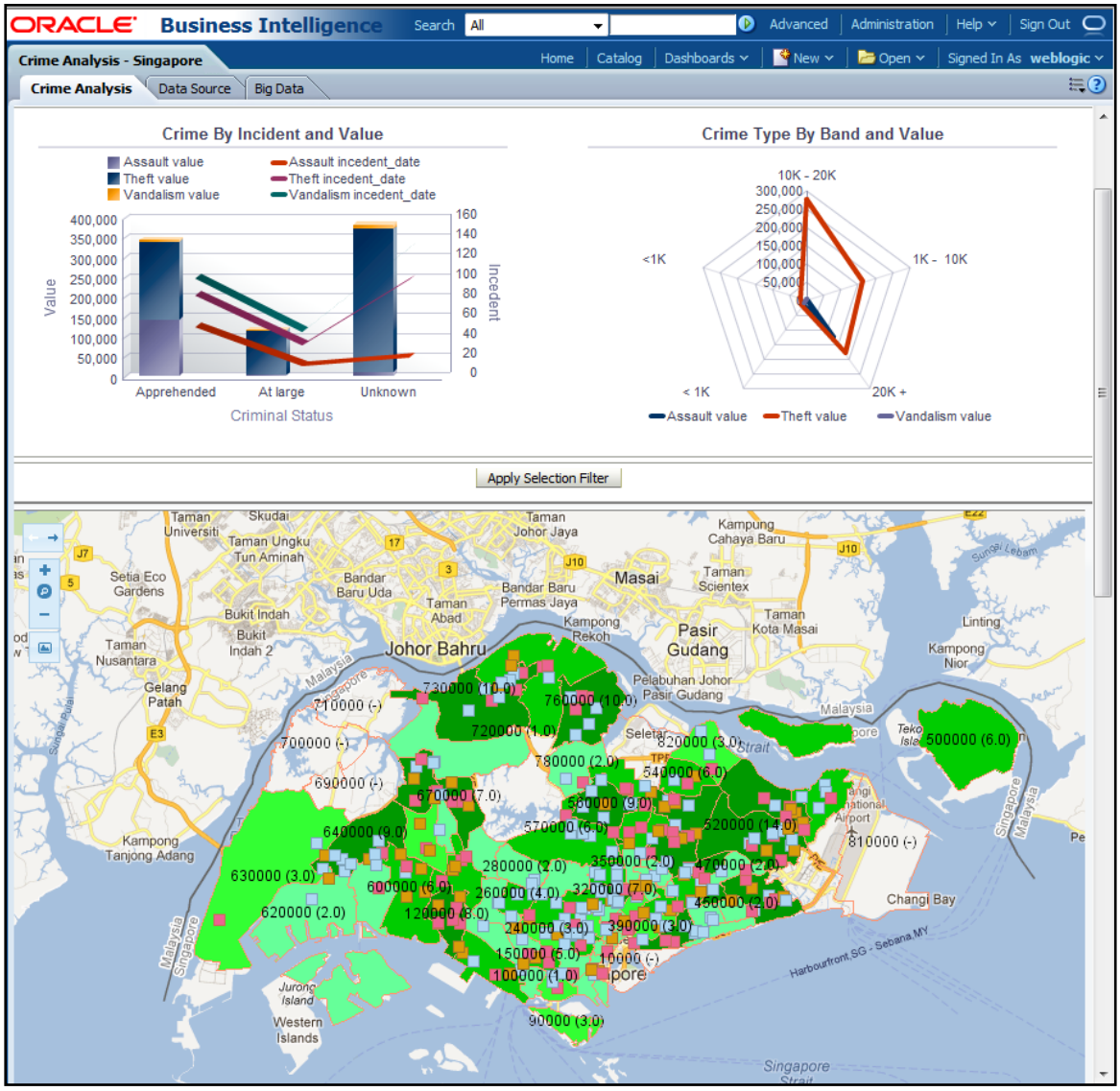


Figure 11. Dashboard Page – Mapping Viewer.

TEMPLATE ANALYSIS

This is a better way of embedding map to a Dashboard. This will expose other Oracle Analysis' Criteria of the same Dashboard Page during map configuration as a data source.

To configure the Narrative View of the Template Analysis

To create Analysis, click **New** from *Oracle Catalog* then select **Analysis** .Choose a **Subject Area** to be used.

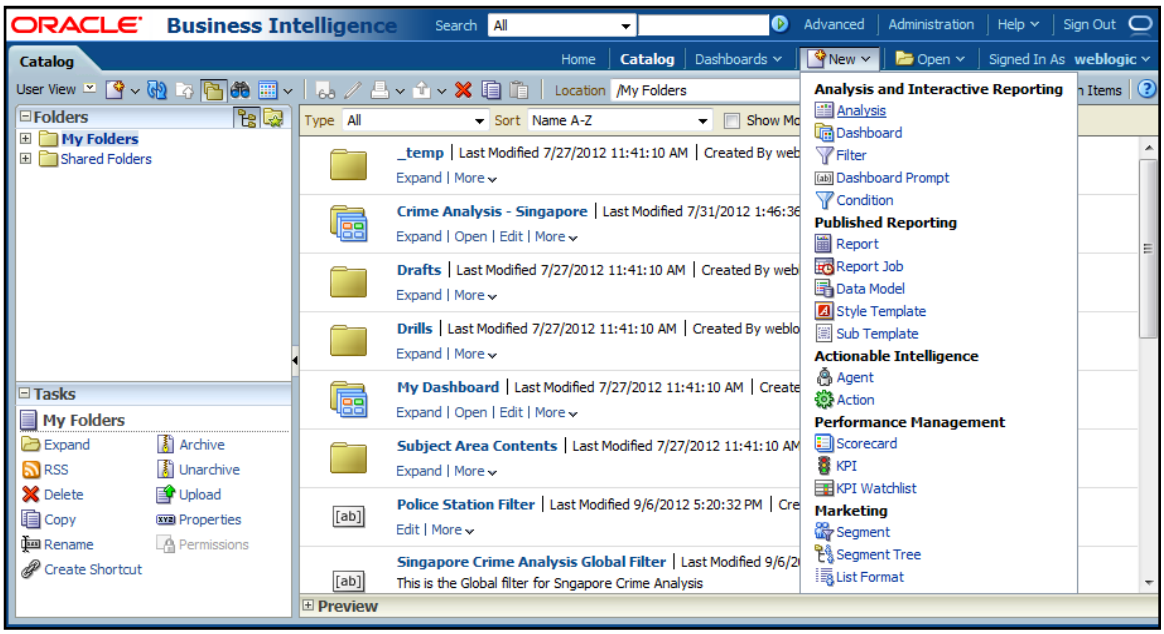


Figure 12. Catalog Page – New Analysis.

1. Collapse the **Subject Area** column, double click at least one of it to add them to *Analysis' Criteria*.

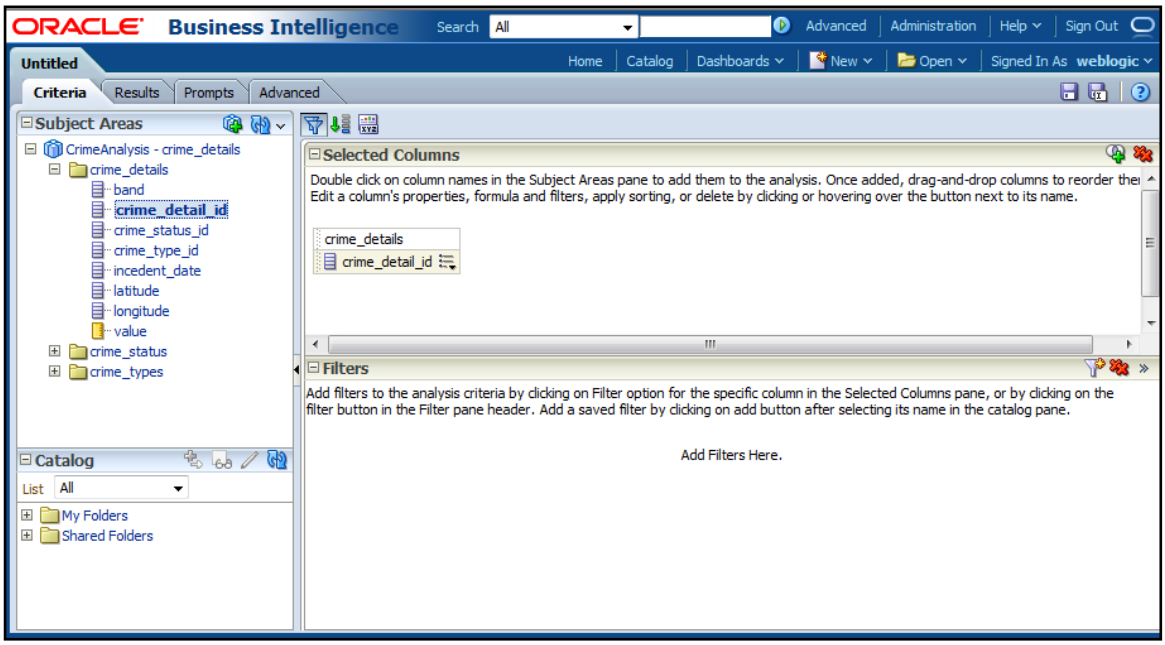


Figure 13. Analysis Criteria Page – Columns and Filters.

Note

A single column is enough given that this will serve only as a template narrative view.

2. Click the **Results** tab. The *Results* page displays.

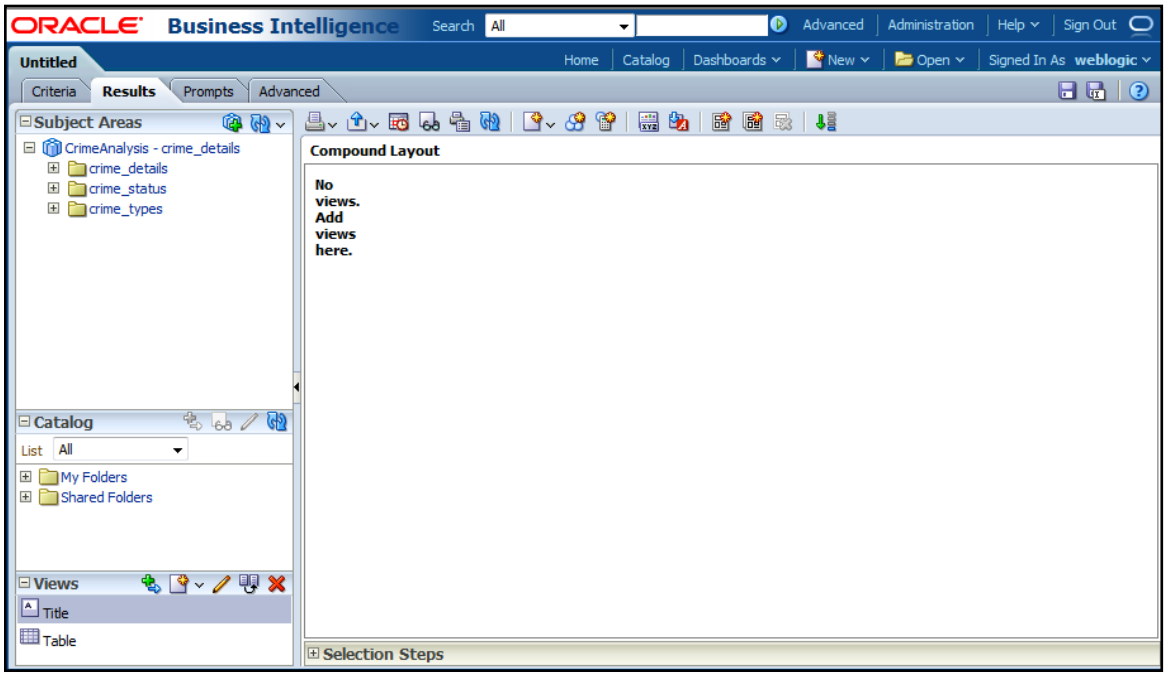


Figure 14. Results Page - Compound Layout was emptied

Note If the **Compound Layout** contains other view(e.g. table), delete it by clicking the icon **Remove View from Compound Layout** .This is to ensure that the **Analysis** will contain only the **Narrative View** that contains the map .

3. Click **New View** drop-down, select **Other Views** then select **Narrative**. Compound Layout display the new *Narrative View*. See Figure 8 in adding **Narrative View**.

4. Click the **Edit View** icon of the **Narrative View**.

5. Place the custom code(see Appendix D) in the **Postfix** workspace then enable the **Contain HTML Markup** checkbox. See Figure 9 for custom code in Postfix workspace.

6. Click **Save Analysis** button. Specify a **Name** for the **Analysis**.

Note Save the **Analysis** to a shared path so that it will be accessible to the dashboards which will be map enabled.

7. Click the **Catalog** menu. The *Catalog* page displays. Locate the Dashboard to be map enabled.

8. Drag and drop the template **Analysis** to the **Dashboard Page** that will be map enabled.

9. Click the Save button of the Dashboard. The Dashboard page is now map-enabled and displays the Mapping Viewer (see Figure 11).

CLIENT PROPERTIES

The *client.properties* file contains some properties for the *MI Client* configuration. This is a guide in modifying the values of the said properties.

To update client.properties

1. Locate this file through
   <install-dir>/tomcat.webapps/miclient/WEB-INF/properties/client

2. Open *client.properties*.

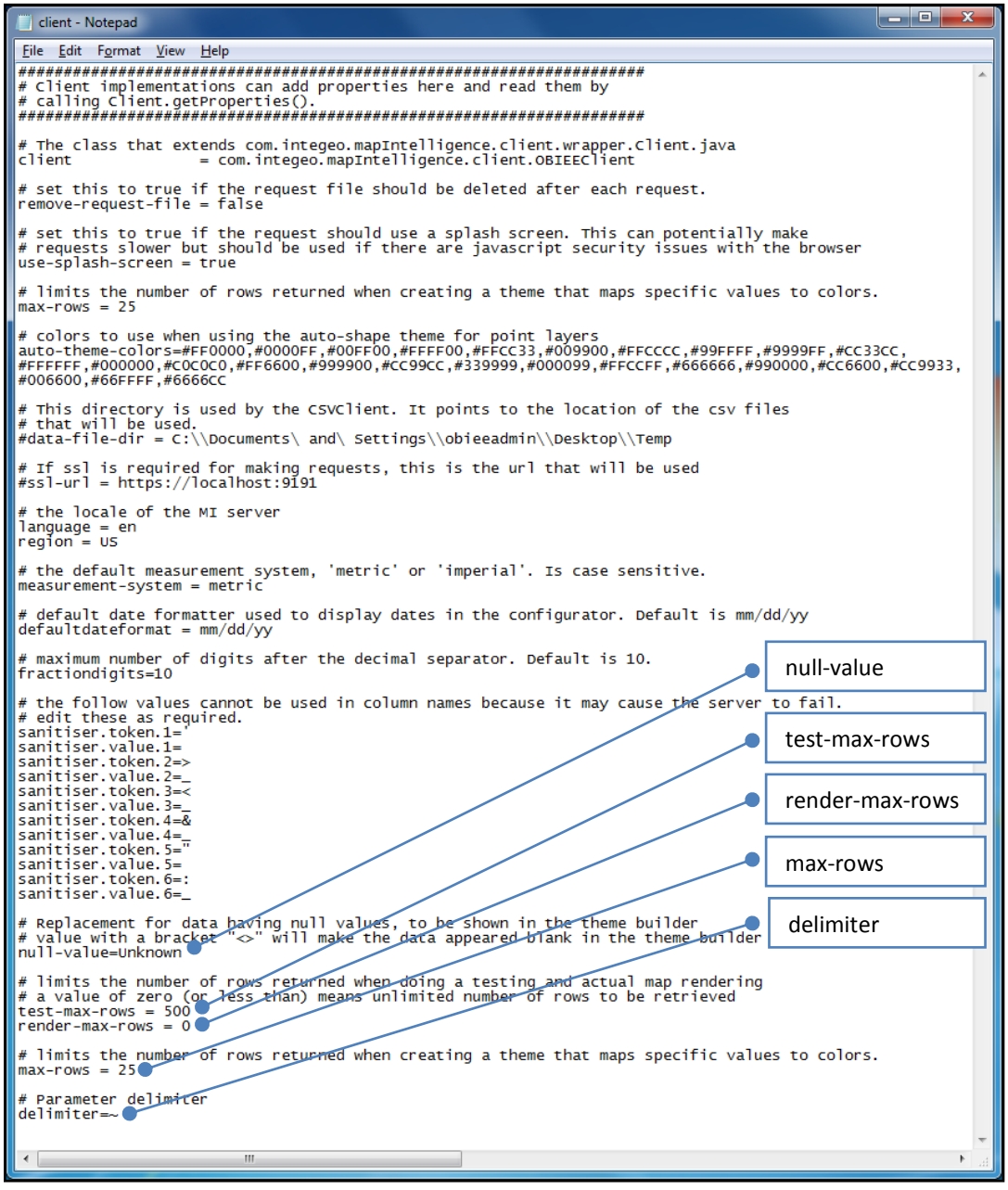


Figure 15. client.properties

3. Set `max-rows` to a value corresponding to the number of distinct values that must be retrieved for the provided column in the Configure tab of the Theme Builder. See the following figure.

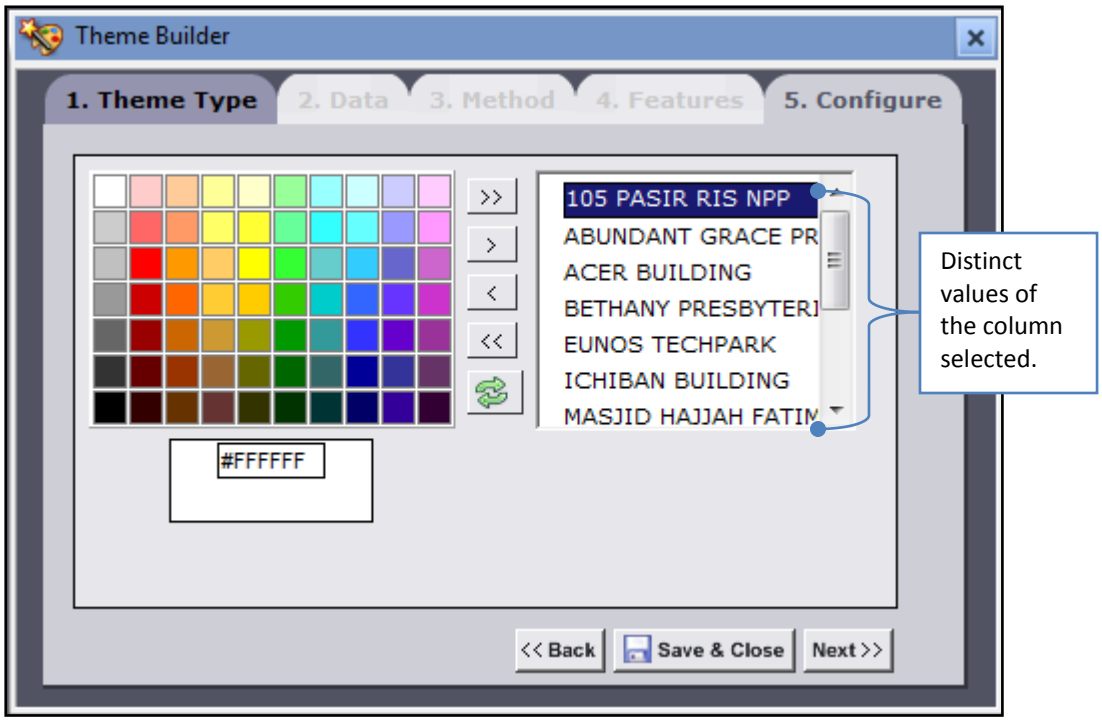


Figure 16. Configure Tab of Theme Builder with sample of retrieved values related to the max-rows setting

4. Set `delimiter` to a character used to delimit parameters or filter prompt values.

5. Set `null-value` property that will serve as a replacement text for null values appearing in the theme-builder and in the information popup box.

```
# Replacement for data having null values, to be shown in the theme builder
# value with a bracket "<>" will make the data appeared blank in the theme builder
null-value=Unknown
```

Figure 17. Null properties

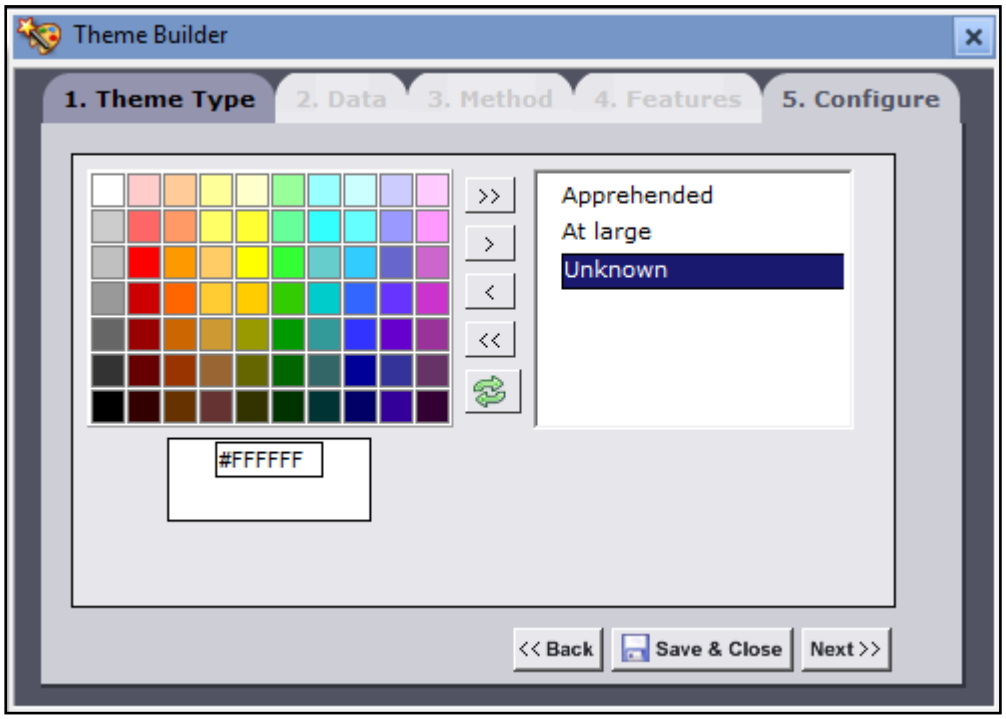


Figure 18. Null Theme Builder

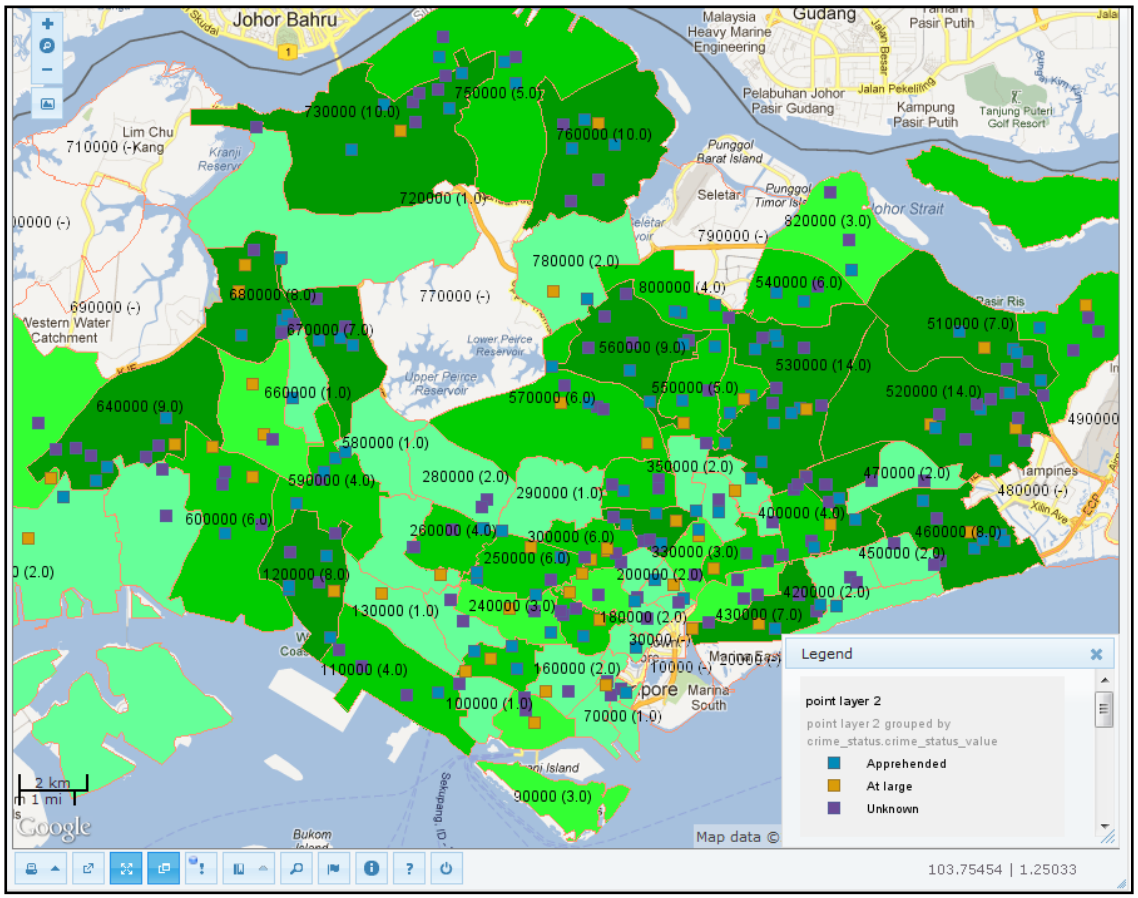


Figure 19. Map with Null values. Legend - Unknown

6. Set `test-max-rows` to a value corresponding to the number of rows/data to be used when rendering the map during the design time or configuration.

   Note A value of zero means that the application will retrieve all the data. This property affects the max-rows property, in which the lesser the `test-max-rows` property, the lesser the data retrieved, Hence, a smaller number of distinct values will be displayed.

7. Set `render-max-rows` to a value corresponding to the number of rows/data to be used when rendering the map during runtime (BI Server/Report Server requesting the map).

8. Save the client.properties.

9. Restart MI Client to apply the changes made in the client.properties file.

ACCESSING THE MI CLIENT CONFIGURATION

This section looks at the steps in accessing the *MI Client Configuration*.

1. Launch an IE browser, access the following URL : http://<machine-name>:<port number>/miclient.

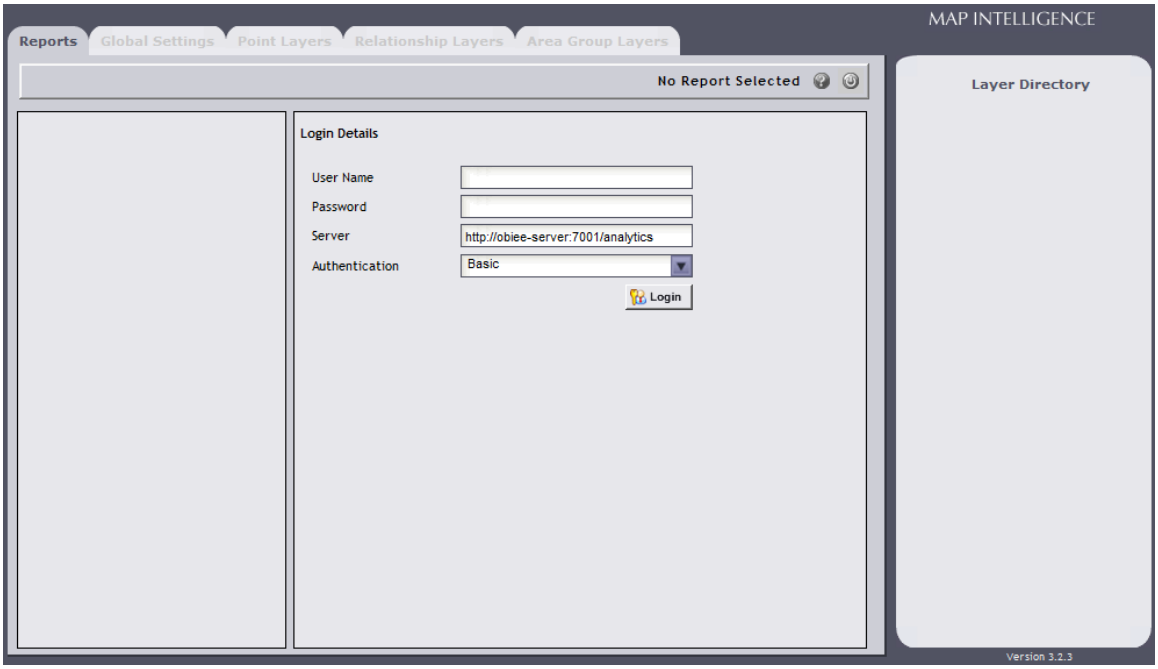


Figure 20. Login page.

2. Type the User Name, Password, Server and the Authentication type on the fields.

   Note
   - On **User Name**, type the OBIEE username that can access OBIEE dashboards/reports
   - At **Password**, type the OBIEE username's password
   - At **Server**, type the URL(http://<obiee server>:<presentation port>/analytics) of the OBIEE Presentation

3. Hit the **Login** button. A successful login is indicated by the display of the **Reports** folder on the right panel.

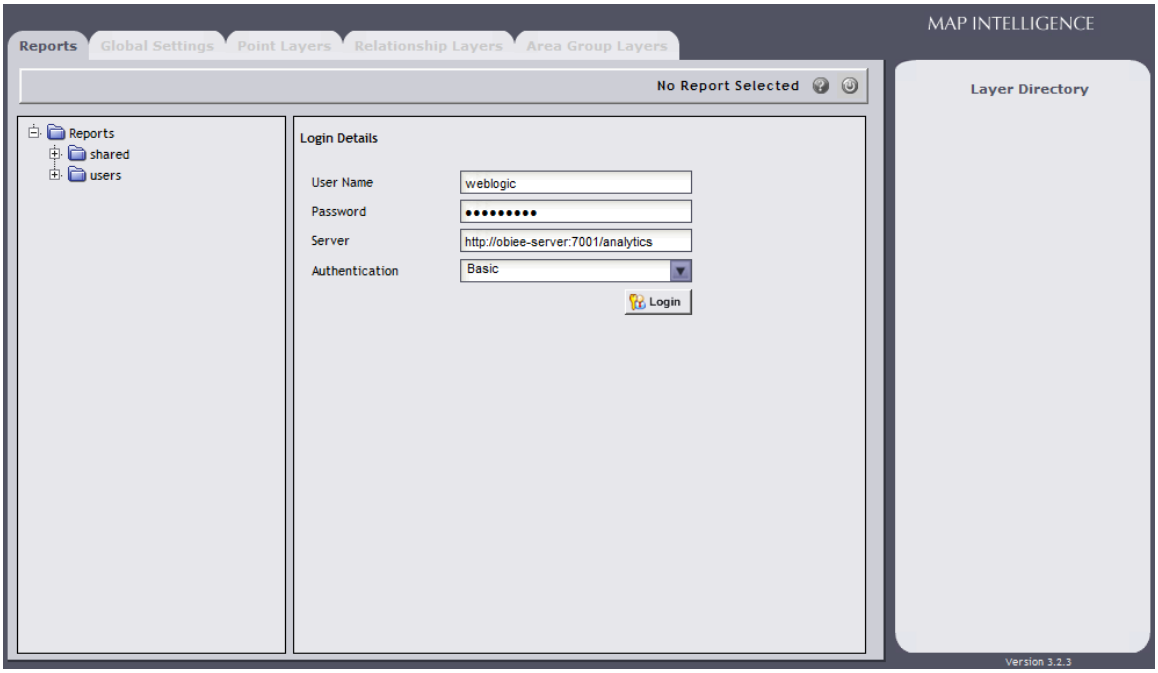


Figure 21. Successful login page.

4. Collapse the **Reports** folder to view the list of reports.

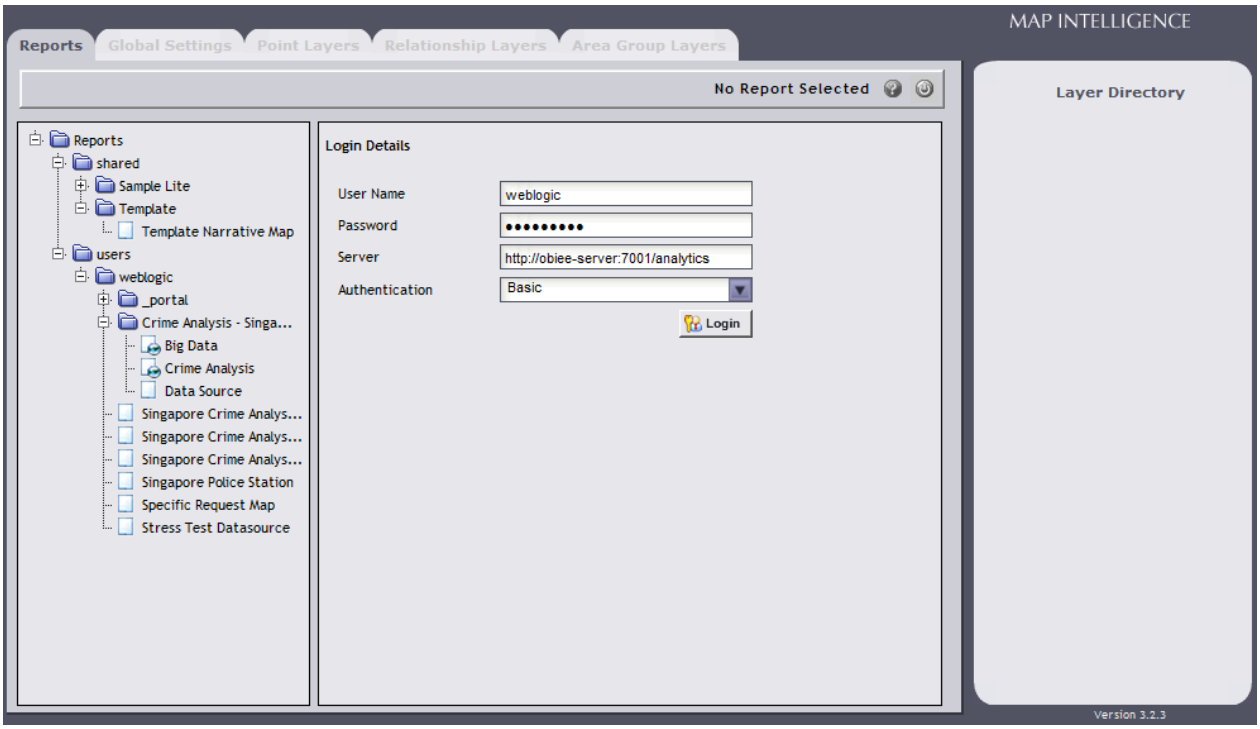


Figure 22. Collapsed Report folder.

5. Either select a specific Analysis or Dashboard Page(which may contain multiple Analysis) to configure. The Global Settings screen displays for the selected Analysis or Dashboard Page.

MI CLIENT CONFIGURATION SCREENS

OVERVIEW

This section looks at the steps required in configuring your analysis layers.

CONFIGURATION SCREENS

There are four configuration screens:

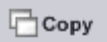
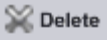
- Global Settings
- Point Layers
- Relationship Layers
- Area Group Layers

Each configuration screen can be accessed by clicking the relevant tab at the top of your screen for example clicking the Area Group Layer tab

will take you to the Area Group Layer configuration screen.

CONFIGURATION SCREEN MAIN MENU

The Main Menu appears at the top of each configuration screen. The following table explains the features of the Main Menu.

Menu Item	Description
Import	To import configurations from another report, click the **Import** button. This button only appears on the Global Settings Main Menu.
New	To clear all fields and set the properties for a new layer, click the **New** button. This button does not feature on the Global Settings Main Menu.
 Copy	To make a copy of a layer, click the **Copy** button. This button does not feature on the Global Settings Main Menu.
Save	To save your configuration screen settings, click the **Save** button. **Note**: This button is global and will save **all** changes made to **all** configuration screens.
 Delete	To delete a layer, click the **Delete** button. **Note**: To permanently remove the layer you must click the **Save** button. This button does not feature on the Global Settings Main Menu.
Test	To test your configuration settings, click the **Test** button, a new browser window will open displaying your layer configuration.
Report Name	The name of your report will appear in the Main Menu bar.
	To open the MI Client Help, click the **Help** button.
	To log off the MI Client and end your BI Session, click the **Log Off** button

GLOBAL SETTINGS

The Global Settings screen allows you to configure the settings for your Map Intelligence Server as well as the properties of the underlying map to be used for your analysis.

To open the Global Settings screen

1. Click on the **Global Settings** tab

, the Global Settings configuration screen will appear.

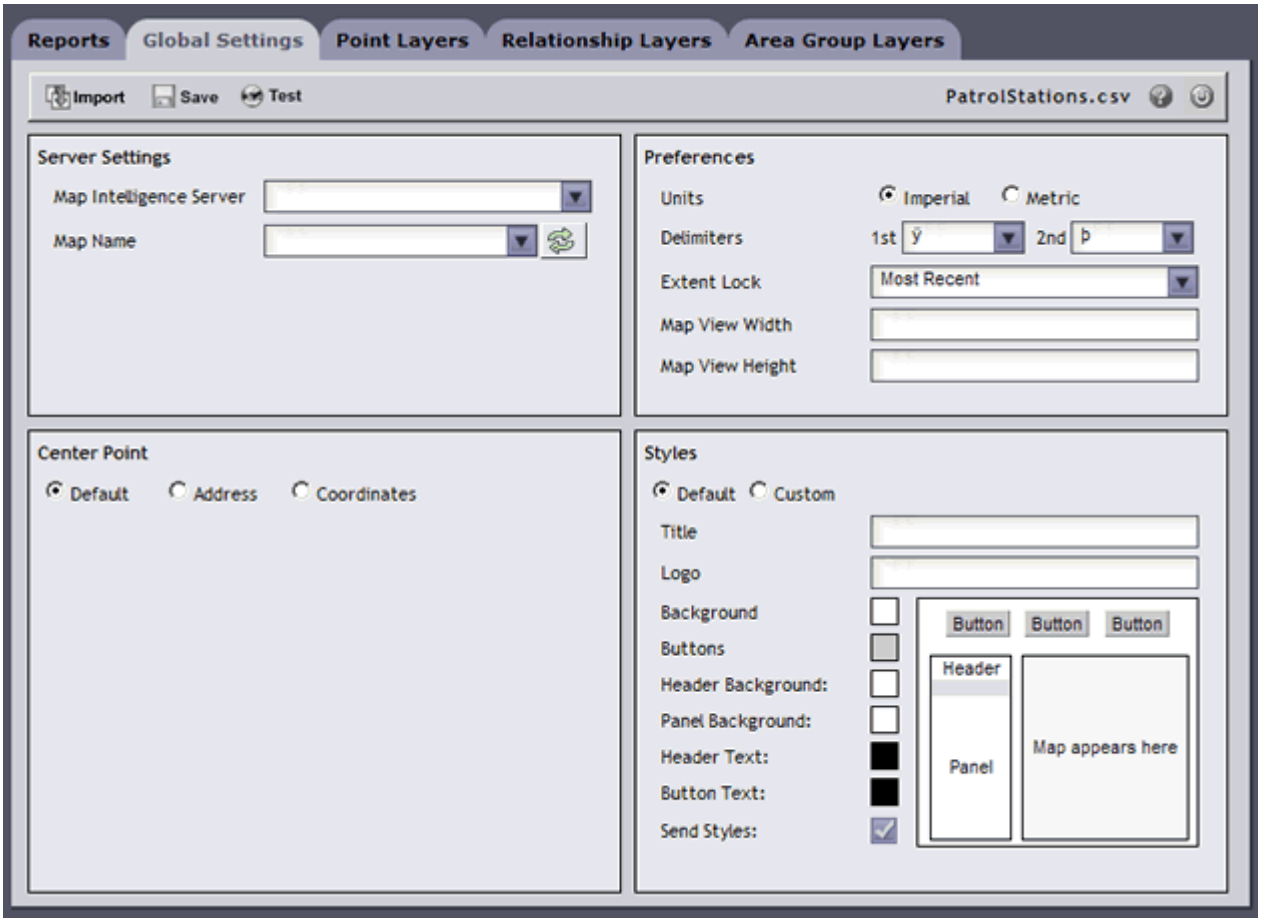


Figure 23. Global Settings Screen.

SERVER SETTINGS SECTION

The **Server Settings** section allows you to specify the Map Intelligence Server and underlying map to be used for the analysis.

To configure the Server Settings

2. In the **Map Intelligence Server** field, enter the Map Intelligence server and port that you wish to use. Previously entered servers are available from the drop-down list.

3. From the **Map Name** drop-down list, select the map that you want to use to display your analysis layers on.

Note

- The Map Name drop-down list contains all the maps that have been added during the Map Intelligence server configuration. Consult your Map Intelligence Server Administrator if the map you wish to use is not available in the drop-down list.
- To refresh the Map Name drop-down list, click the Refresh button .

Figure 24. Server Settings Section.

CENTER POINT SECTION

Setting the Center Point controls the way your map is initially displayed on opening.

- **Default** – selects a center point by plotting all the points specified by the visible point layers and takes the center point of all points. If no point layers are set as visible, the Center point is taken from visible Region layers (i.e. Relationship or Area Group Layers).
- **Address** – allows you to specify a valid street address to set as the center point for the map. If you select this option, you will need to specify the street/address, suburb/city, state and zip / post code and country values for your center point (the *Country* field is optional). You must specify a map width or the default center point will be used.
- **Coordinates** – allows you to specify a coordinate to set as the center point for the map. If you select this option, you will need to specify the latitude and longitude values for your center point. You must specify a map width or the default center point will be used.

To set the Center Point using an Address

1. Click on the **Address** radio button.
2. In the **Map Width** field, type in the width of the map to be initially displayed.

   Note This value is in kilometers or miles depending on the unit of measurement selected in the Units section (see Preferences Section below). If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your Center Point option.

3. In the **Street**, **City**, **State, ZIP**/**Postal Code** and **Country** (optional) fields, enter the address details for the center point at which you wish the map to be initially displayed.

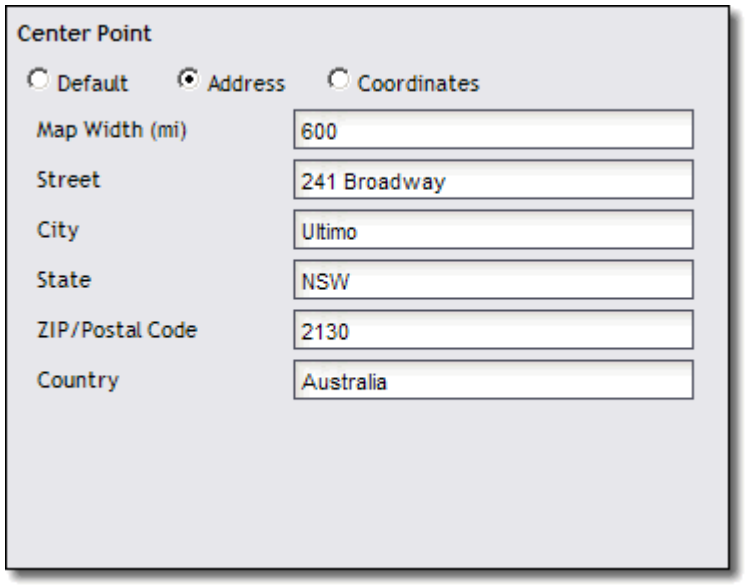


Figure 25. Center Point Section – Address Option.

To set the Center Point using Coordinates

1. Click on the **Coordinates** radio button.

2. In the **Map Width** field, type in the width of the map to be initially displayed.

   Note This value is in kilometers or miles depending on the unit of measurement selected in the Units section (see Preferences Section below). If you do not specify a map width, Map Intelligence will apply a default width that will display all your points. In this case, it is recommended that you select Default as your Center Point option.

1. In the **X (Longitude)** and **Y (Latitude)** fields enter the coordinates for the center point at which you wish the map to be initially displayed.

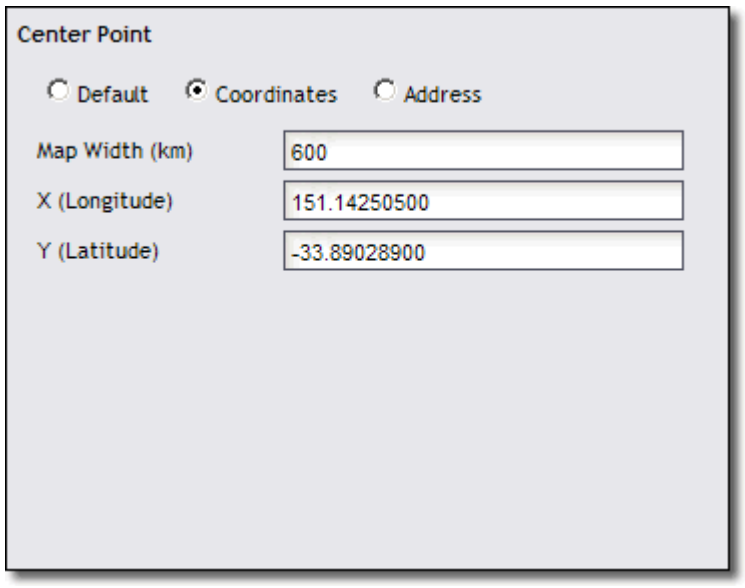


Figure 26. Center Point Section – Coordinates Option.

Note

- For maps with projected coordinate systems, when setting Center Point properties, the Y coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.
- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.

PREFERENCES SECTION

The Preferences section allows you to configure properties of the Mapping Viewer.

To configure the Preference Section

1. Select the **Units** radio button for the measurement that you would like to use for your analysis.

   - Imperial (miles, feet)
   - Metric (kilometers, meters)

2. From the **1st Delimiter** drop-down list, select a character to act as a separator for your data as it is sent to the Map Intelligence Server.

2. From the **2nd Delimiter** drop-down list, select a second character to act as a separator for your data as it is sent to the Map Intelligence Server.

   Note The delimiter characters act as a separators for your data as they are sent to the Map Intelligence Server. You must select characters that do not exist within your data to avoid errors. The default character for the 1st Delimiter is ÿ and the default character for the 2nd Delimiter is þ.

3. From the **Extent Lock** drop-down list, select an extent lock option.

   The Extent Lock determines the map extent to be used when a user makes a new map request from the client. The lock extent options are listed below:

   - Most Recent: The last viewed extent will be used.
   - No Lock: The extent will be calculated on a bounding box around the visible data.
   - Disabled: The extent lock will be based on the Extent Lock setting selected by the user in the Mapping Viewer.

   Note If a center point is specified in the Center Point Section, the view of the map adheres to this center point. Subsequent requests in the session adhere to the lock specified by the client.

4. In the **Map View Width** field enter in pixels the width of the Map View.

5. In the **Map View Height** field enter in pixels the height of the Map View.

   Note The Map View Width and Height settings override the default settings set by the Server Administrator.

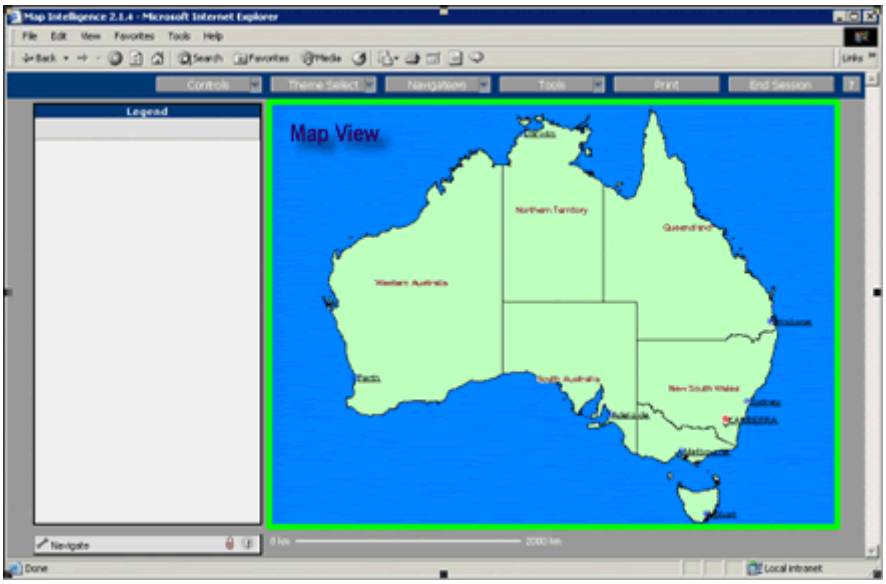


Figure 27. Mapping Viewer showing the Map View highlighted in green.

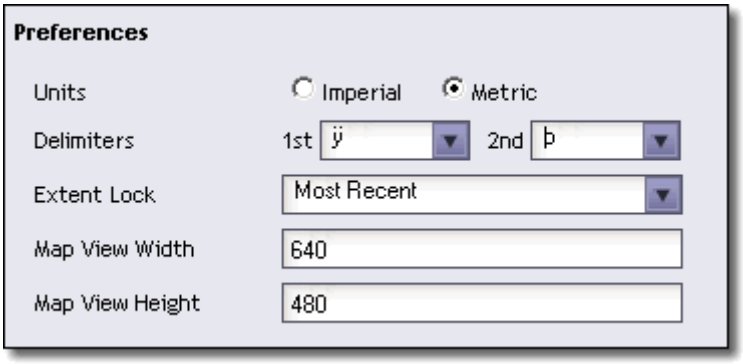


Figure 28. Preferences Section.

STYLES SECTION

The Styles section allow you to define the look and feel of the default Mapping Viewer or select a custom Mapping Viewer.

To configure the Default styles

The Default Styles section allows you add a title and logo to the top panel of the Mapping Viewer.

1. Ensure the **Default** radio button is selected.
2. In the **Title** field, enter the title that you want to appear in the top panel of the Mapping Viewer (see Figure 29 below). This field is optional.
3. In the **Logo** field, enter the file name of the image that you want to appear in the Top Panel of the Mapping Viewer (see Figure 29). This field is optional.

Figure 29. An example Mapping Viewer Top Panel showing the Title "Fast Food Franchise Analysis" and Integeo/Burger Logo.

The specified file must be located in the Images folder of the Map Intelligence directory on the server machine.

Note The recommended size for the image is 70 x 70 pixels. Larger images may cover some elements or change the format of the Mapping Viewer

The Styles section also allows you to configure the look and feel of the Mapping Viewer. The color of the following elements can be changed:

- Background
- Buttons
- Header Background
- Panel Background
- Header Text
- Button Text

To change the color of each element

1. Click on the colored rectangle next to the element name, a color picker will appear, select the new color, the Style Preview will change showing the new color.

   Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

2. Click on the **Send Styles** checkbox .

   Note If the Send Styles checkbox is unchecked the Mapping Viewer will use the *Default Look and Feel* settings configured on the Map Intelligence Server.

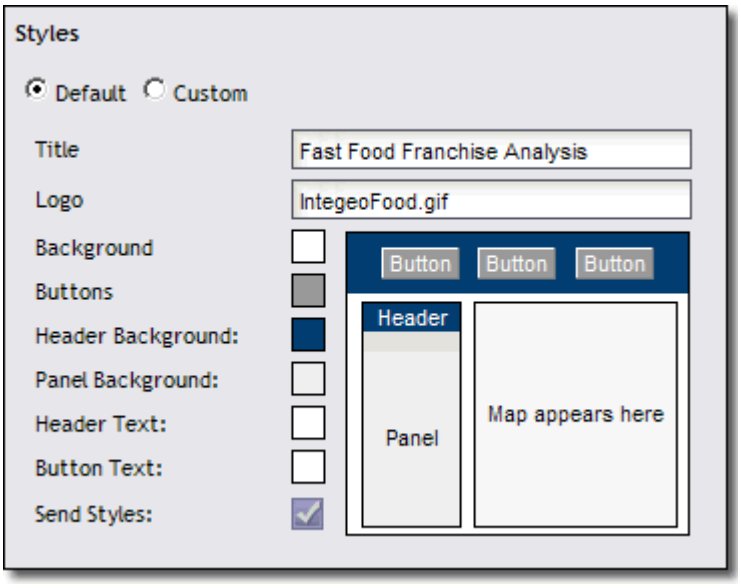


Figure 30. Styles Section (Default option) showing a blue/gray color scheme

To use the Custom option

As of Map Intelligence Server Version 3.2.2, Map Intelligence allows organizations to create custom Mapping Viewer User Interfaces that can be used instead of the standard Map Intelligence Mapping Viewer. Examples of this could be to use Google Maps, Open Layers or even map layers from Excel over the existing in-house spatial applications being used by organizations. If more than one viewer is registered with your Map Intelligence server, you can enter the name in the Template Name field as shown below.

1. Select the **Custom** radio button.
2. In the **Template Name** field enter the name of the custom Mapping Viewer you wish to use.

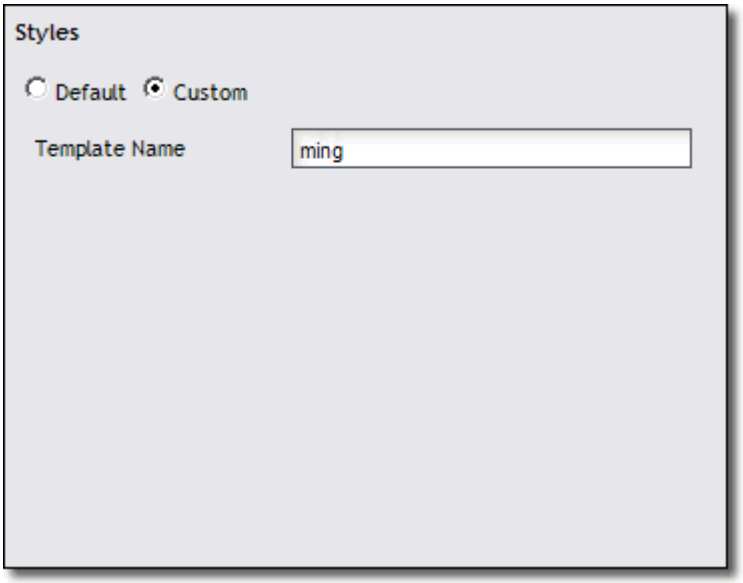
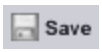


Figure 31. Styles Section (Custom option)

To save your Global Settings

1. From the **Main Menu**, click **Save** button  to save your settings.

The save button will save **all** changes made to **all** configuration screens.

MAP INTELLIGENCE LAYERS

OVERVIEW

Maps are made up of layers. Map features such as roads, parks or traffic lights are held on different layers. Each map is composed of one or more layers that are superimposed to give the final map *look and feel*.

Layers that reside as part of the mapping environment are referred to as **built-in layers**. Layers created dynamically from external data sources are known as **Map Intelligence layers.**

There are currently four Map Intelligence layer types:

- Point Layers
- Radius Relationship Layers
- Region Relationship Layers
- Area Group Layers

See Layer Types for a full description of Map Intelligence layers. The MI Client comes with configuration screens that allow you to create your Map Intelligence layers.

LAYER DIRECTORY

The Layer Directory appears to the right of the Point Layer, Relationship Layer and Area Group Layer configuration screen. After testing or saving a layer configuration, the layer is listed in the directory under it's layer type.

The Layer Directory can be used to navigate and open the various Map Intelligence layers you create.

To open a layer

1. From the **Layer Directory**, click on the plus icon next to **Layer Type.** The Layer section will expand.
2. Click on the **Layer** you want to open.

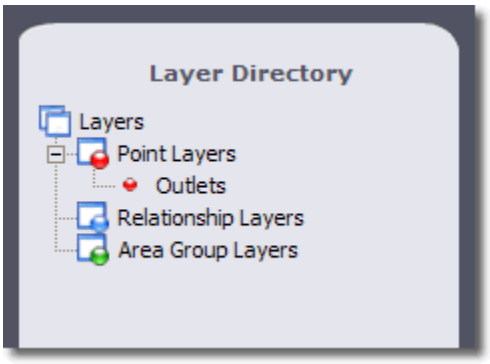


Figure 32. Layer Directory, showing the expanded Point Layer section.

Note Layers will be displayed on the map in the order that they appear in the Layer Directory sections. E.g. the first layer in the Layer Directory - Point Layer section of the will be the top-most layer in the map.

CONFIGURE POINT LAYERS

Note For a description of Point layers, see Layer Types, Point Layers.

To open the Point Layer configuration screen

1. Click on the **Point Layers** tab

, the Point Layer configuration screen will appear.

2. Click the **New Layer** button

. This clears the fields and allows you to set the properties for a new layer.

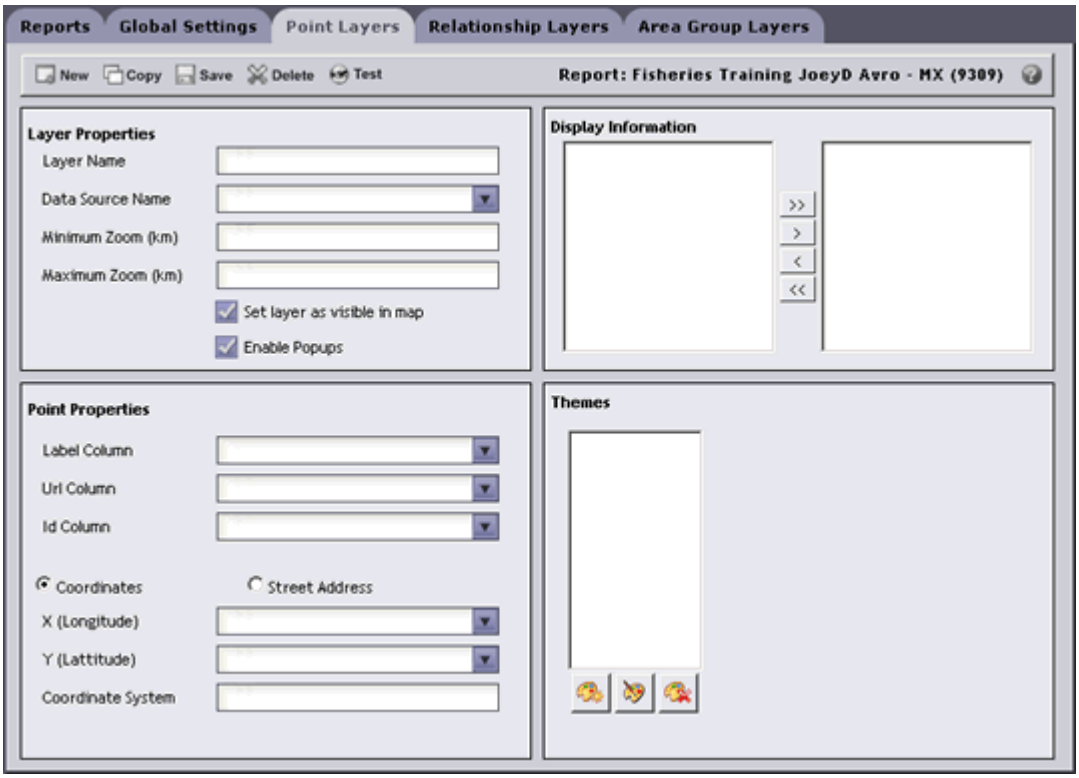


Figure 33. Point Layer configuration screen.

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** field, enter a title for the layer.

   Note Layer names are trimmed (spacing characters at the beginning or end are removed) and cannot contain double or single quotes. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. From the **Data Source Name** drop-down list, select the data source that contains the data to be used as points for this layer.

   Note **Data Source Name** is the concatenated Analysis' location and name..

3. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom and Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum zoom values.

4. Select the **Set Layer as Visible in Map** checkbox if you wish this particular layer to be visible when you first access the Mapping Viewer.

5. Select the **Enable Popups** checkbox if you wish information popups to be enabled for the layer when you first access the Mapping Viewer.

Note Information Popup boxes provide further information about a point when you move your mouse over the point on the map (See Display Information below).

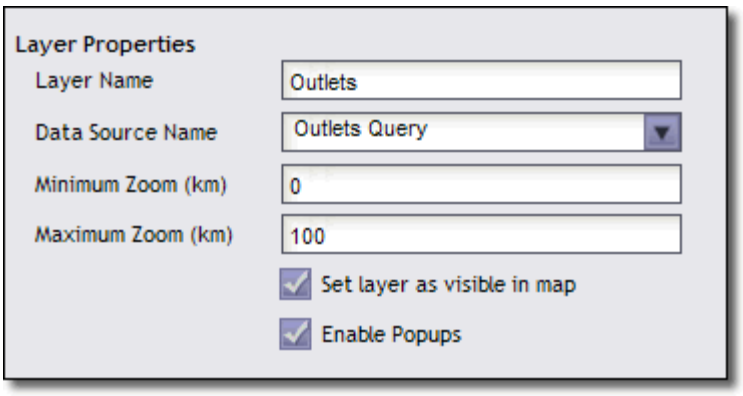


Figure 34. Layer Properties Section.

POINT PROPERTIES SECTION

To configure the Point Properties section

1. From the **Label Column** drop-down list, select a column that contains the values to appear on the labels for each point in the layer. Applying a label for each point in the layer is optional.

2. From the **URL Column** drop-down list, select a column that contains URLs associated with the points in the layer. Applying a URL for points in the layer is optional.

Note Multiple URLs can be assigned to a point using semi-colons to separate names and values.

The following format is required for the column that is used as a url column

<Name>;<Url>;(space)<Name>;<Url>

For example:

"**Pitney Bowes Web Site;http://www.pb.com; Report;report.pdf**"

From Mapping Viewer, the **Active Points** tool can be used for points that have been assigned to a single URL. If a point has been assigned to multiple URLs, the active links can be viewed from the **Information Panel**. For further information on the Active Points and Information sections refer to the *Mapping Viewer User Manual*

6. From the **Id Column** drop-down list, select a column that contains unique values to be used to identify individual points when using the Selection Tool. See the Selection section of this manual and the *Foreground Tools*, *Selection* section of the *Mapping Viewer User Manual*.

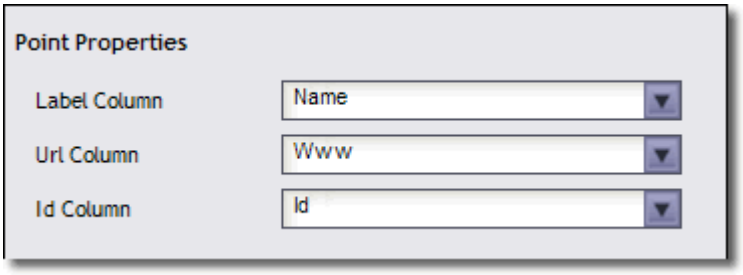


Figure 35. Point Properties section: Label, URL and Id Columns.

The Point Properties section also allows you to select the method for plotting the points on the map. Points can be mapped using coordinates or valid street addresses.

7. Select the appropriate radio button.

If you select the **Coordinates** radio button, you must specify the columns that contain the Y (Latitude) and (X) Longitude values for each point. You can also specify the coordinate systems to use for the layer if you do not intend to use the inherent coordinate system of the selected map.

Note

- A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the Coordinate Systems document. This field is optional.
- For maps with projected coordinate systems, when setting Center Point properties, the Y coordinate (or Northing) is set in the latitude field and the X coordinate (or Easting) in the longitude field. These settings are in the units of the underlying map, usually meters rather than degrees.
- For maps with projected coordinate systems the longitude is set to the column of the X coordinate and the latitude is set to the column of the Y coordinate in Point layers.

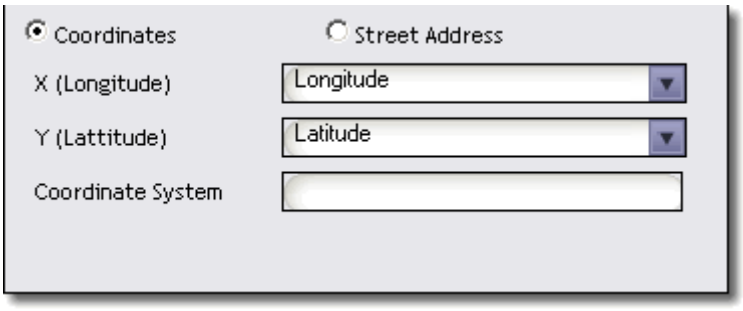


Figure 36. Point Properties Section – Coordinates Option.

If you select the **Street Address** radio button, you must specify the columns that contain the **Street/Address**, **City**, **State** and **Zip** / **Postal Code** values for each point. The **Country** field is optional.

Figure 37. Point Properties Section - Street Address option.

Note The Street Address option will only work if a geocoder has been installed or a geocoded map layer is available.

DISPLAY INFORMATION SECTION

Data columns can be sent to the Mapping Viewer to provide further information about each point. The values contained in these columns will appear in a popup window when you move your mouse over a point in the map.

To configure the Display Information section

1. Select the data columns that you want to display from the left hand list box and click the > button. To remove a selection, select the data column from the left hand list box and click the < button.

Note To select all the data columns click the >> button. To remove all selections click the << button.

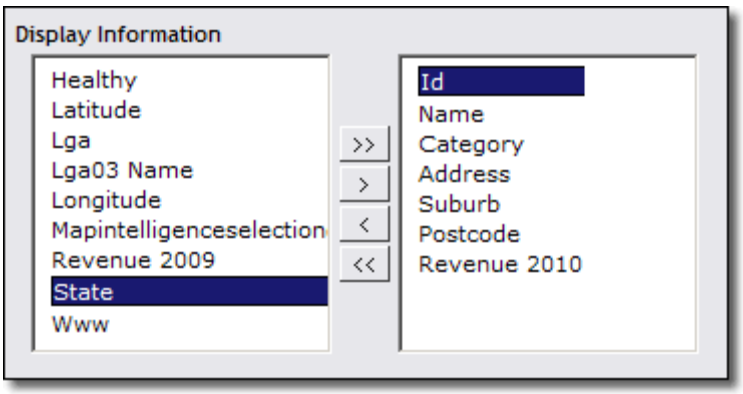


Figure 38. Display Information section.

THEMES SECTION

The **Theme** section allows you to select the method for applying a theme for your layer. Setting a theme involves color-coding or assigning images to points in the layer using the **Theme Builder** Wizard.

To create a theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open.

The following theme types are available:

Single Shape Icon

This option allows you to specify one shape of one color to represent all your points.

Multiple Shape Icon

This option allows you to select a shape and color code the shape according to the column value. For example selecting the circle shape to represent all the fishing boat points, then color coding the circles according to the name of the boat.

Single Image Icon

This option allows you to specify a single image to represent all the points in the layer.

Multiple Image Icon

This option allows you to select a different image for each column value.

Auto Classification

This option allows you to specify the number of classes into which column values will be distributed.

Creating a Single Shape Icon Theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open displaying the **Theme Type** tab.
2. From the **Theme Type** drop-down list select **Single Shape Icon**.
3. From the **Icon Shape** drop-down list, select the shape that you want to use to represent each point in the layer.

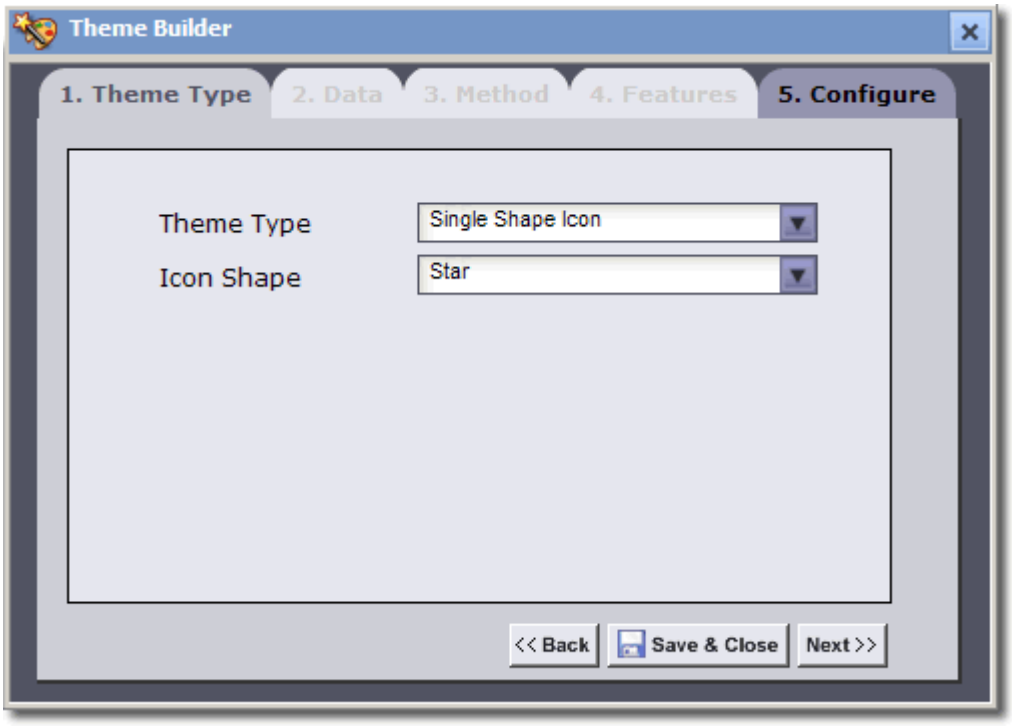


Figure 39. Theme Builder Wizard – 1. Theme Type (Single Shape Icon). In this example the Star shape has been selected.

4. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

5. Select a color for your shape from the color swatch.

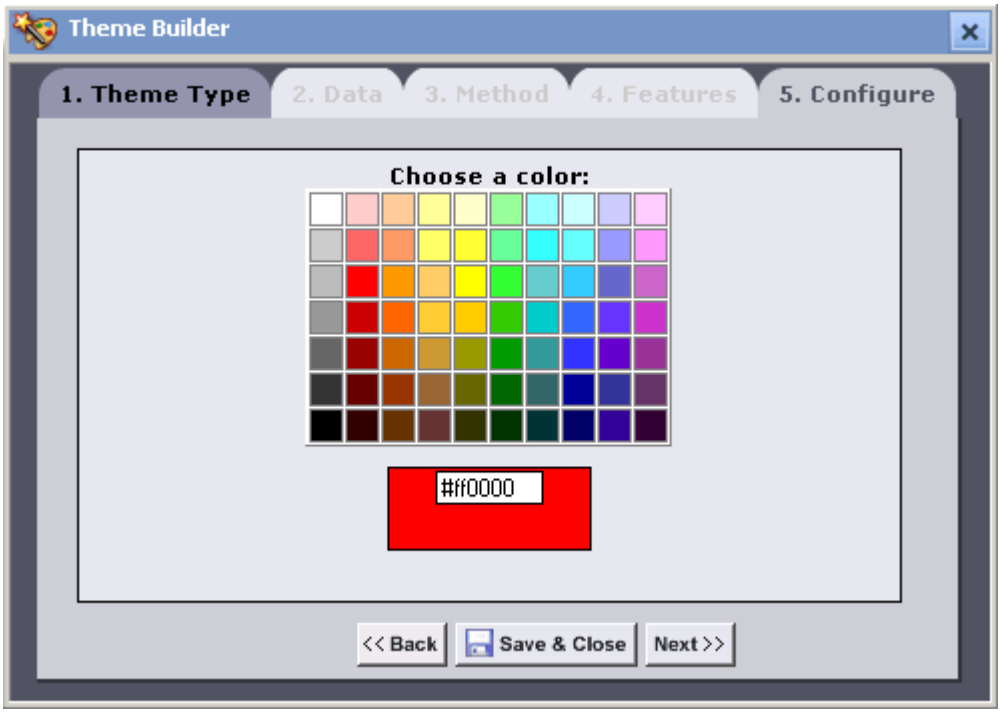


Figure 40. Theme Builder Wizard – 5. Configure. In this example the color red has been selected.

Note If the particular color you wish to use is not shown on the color swatch you can type the hexadecimal value directly into the text box below the color swatch.

6. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Point Layer configuration screen.

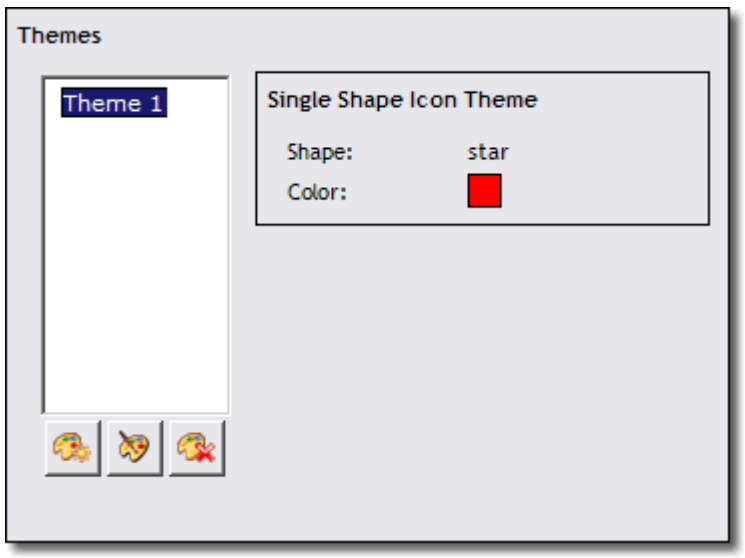


Figure 41. Themes Section showing Single Shape Icon Theme 1. In this example we can see we selected a star shape and the color red.

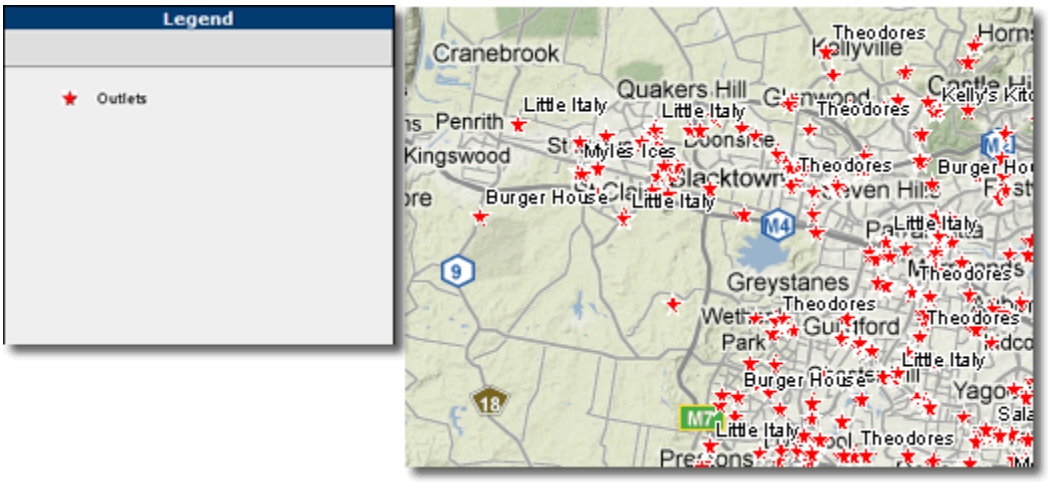


Figure 42. Map View and Legend showing the Single Shape Icon Theme. In this example all fast food outlets are themed as red stars ★. Each point is labeled according to the Name of the franchise.

Creating a Multiple Shape Icon Theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open displaying the **Theme Type** tab.
2. From the **Theme Type** drop-down list select **Multiple Shape Icon**.
3. From the **Column Name** drop-down list, select a column to configure (this list contains all selected data columns).
4. From the **Icon Shape** drop-down list, select the shape that you want to use to represent each point in the layer.

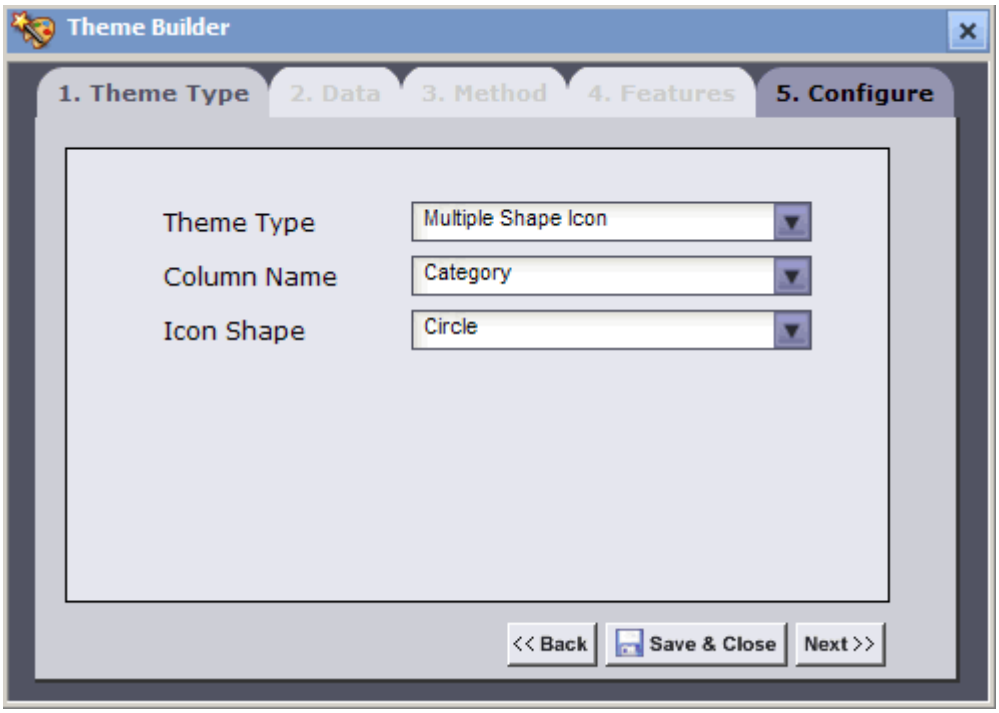


Figure 43. Theme Builder Wizard – 1. Theme Type (Multiple Shape Icon).

5. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

6. Select a value from the value list box on the right.

Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take some time to process.

7. From the color swatch click on the color you wish to associate with the selected value. The chosen color will appear next to the value in the value list.

Using the Selection Arrow Buttons

>	Associates a color randomly to the selected value.
>>	Associates colors randomly to the selected value and all values below the selected value.
<	Removes associated color from selected value.
<<	Removes all associated colors from all values.

Note If the particular color you wish to use is not shown on the color swatch you can type the hexadecimal value directly into the text box below the color swatch.

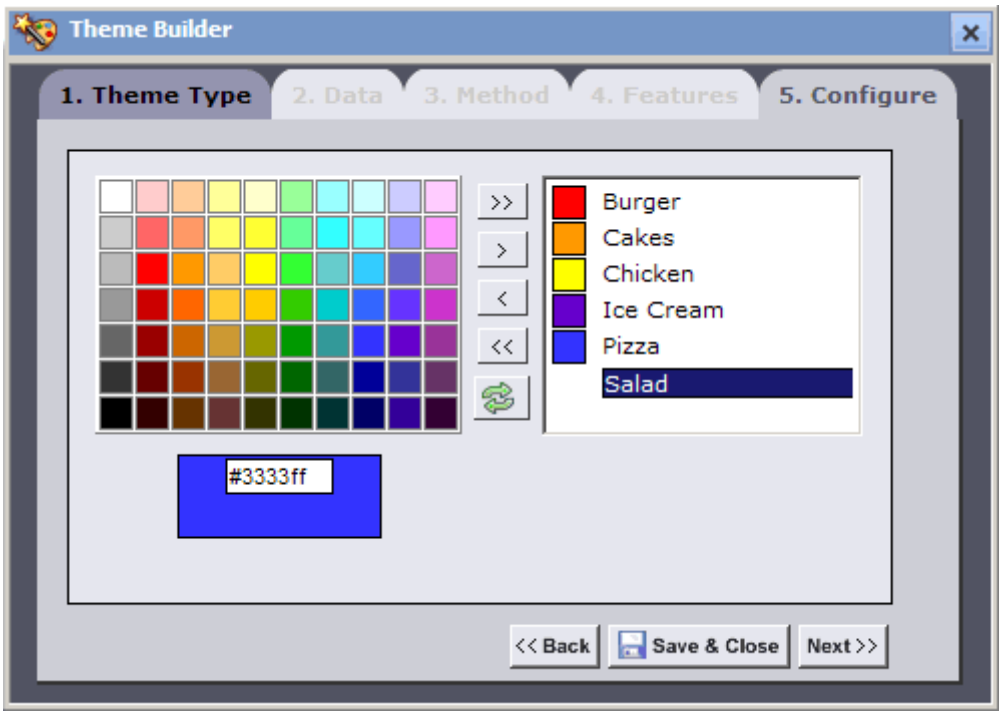


Figure 44. Theme Builder Wizard – 5. Configure (Multiple Shapes).

8. Repeat the steps above if you want to assign themes to other columns.

9. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Point Layer configuration screen.

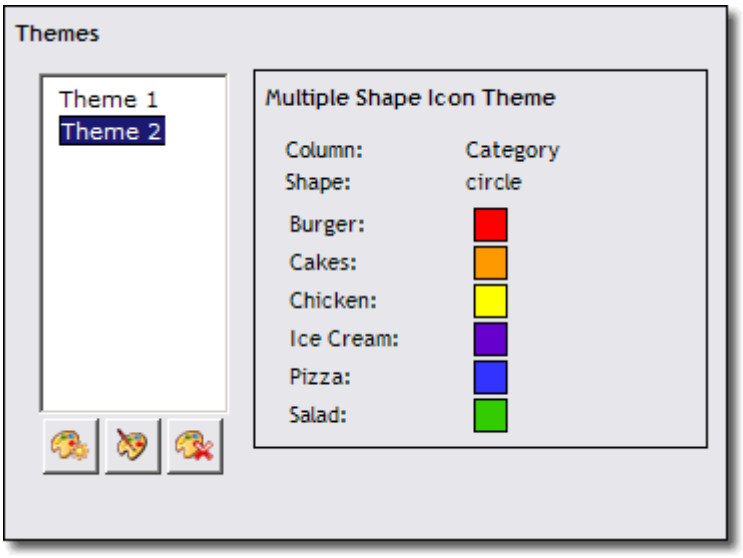


Figure 45. Themes Section showing Multiple Shape Icon Theme (Theme 2).

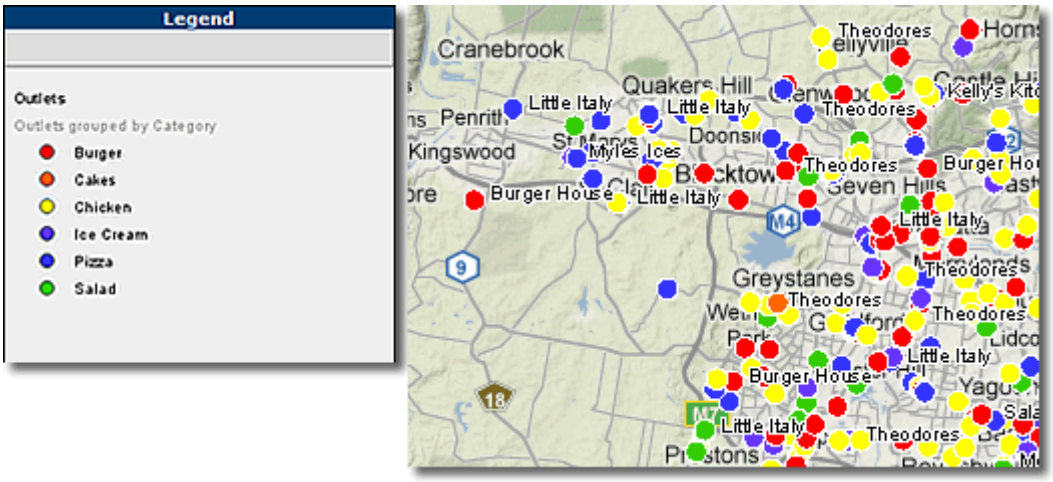


Figure 46. Map View and Legend showing the Multiple Shape Icon Theme. We can see each fast food franchise is represented by a colored circle, color-coded by food type category, for example red circles for Burger outlets ●, blue for Pizza outlets ●. Each point is labeled according to the Name of the franchise.

Creating a Single Image Icon Theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open displaying the **Theme Type** tab.

2. From the **Theme Type** drop-down list select **Single Image Icon**.

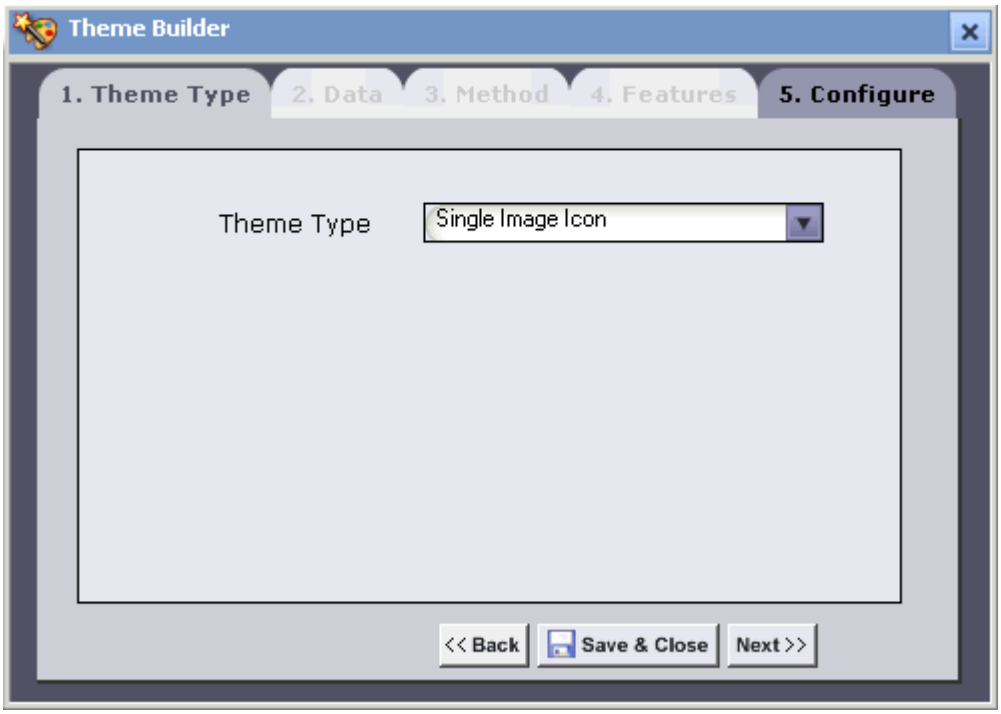


Figure 47. Theme Builder Wizard – Theme Type (Single Image Icon).

3. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

4. Select an Image from the bottom images list box. The selected image will be appear with a red border.

Note Placing your cursor over an image will display the actual image size in the Preview box above.

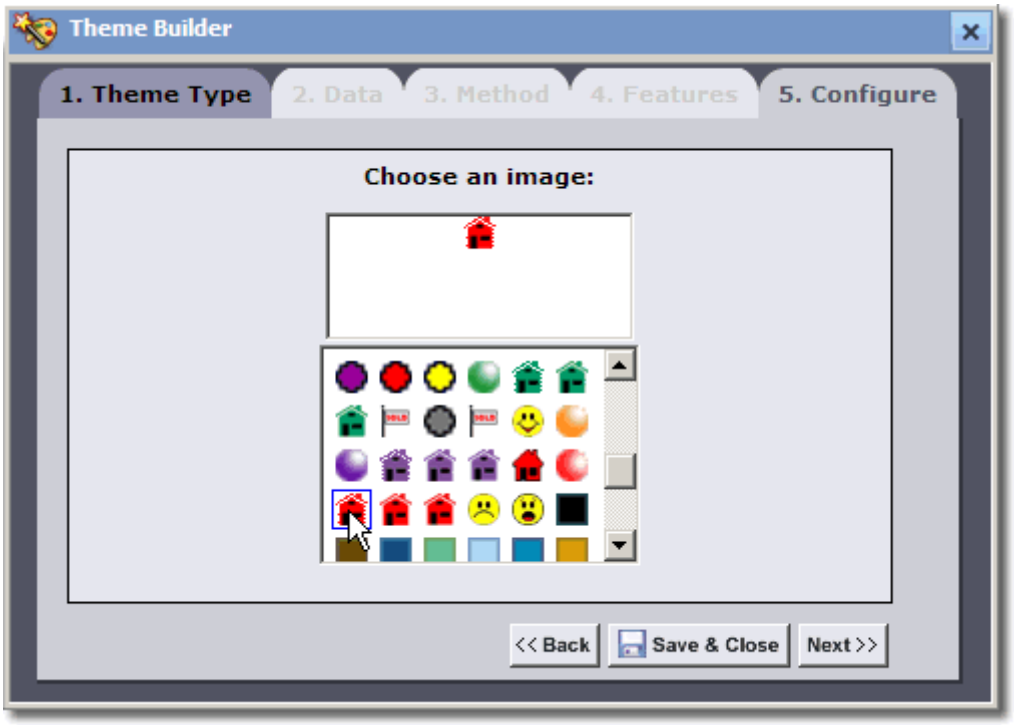


Figure 48. Theme Builder Wizard – 5. Configure (Single Image).

5. Click the **Save & Close** button . The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Point Layer configuration screen.

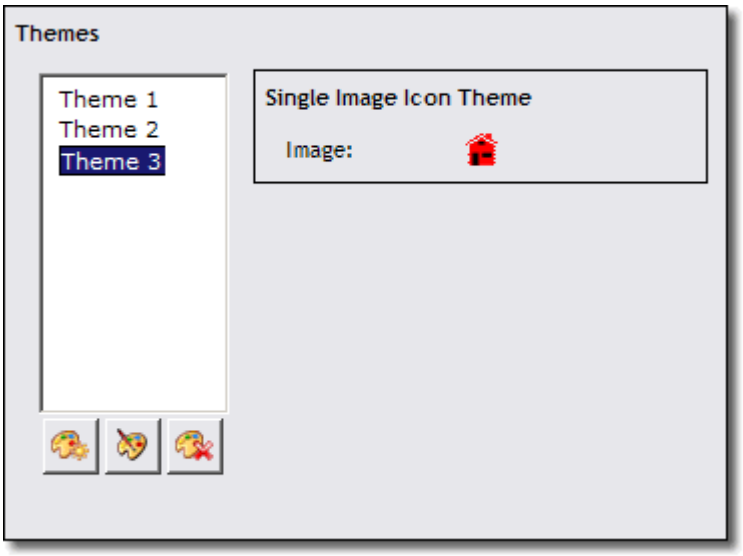


Figure 49. Themes Section showing Single Image Icon Theme (Theme 3).

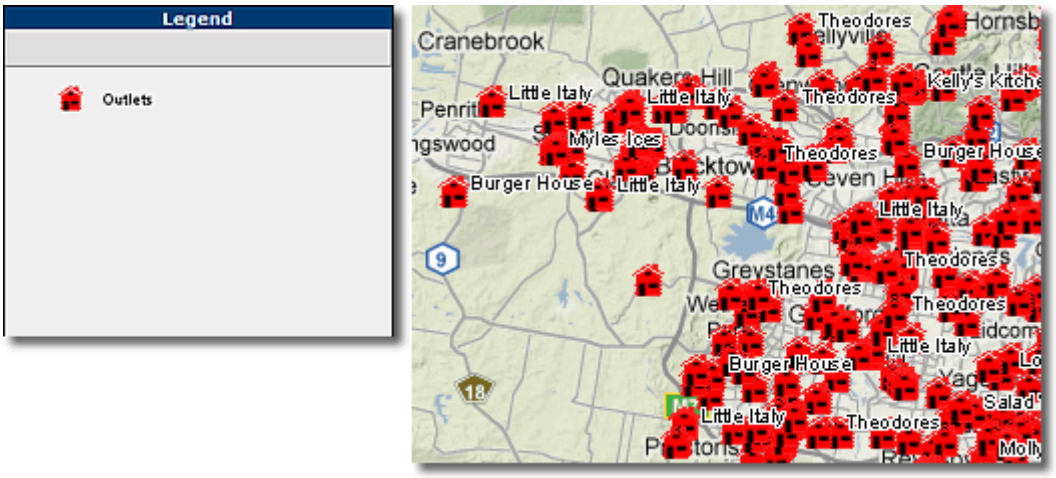


Figure 50. Map View and Legend showing the Single Image Icon Theme. In this example the location of Fast Food Outlets are displayed as red houses .

Creating a Multiple Image Icon Theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open displaying the **Theme Type** tab.
2. From the **Theme Type** drop-down list select **Multiple Image Icon**.
3. From the **Column Name** drop-down list, select a column to configure (this list contains all selected data columns).

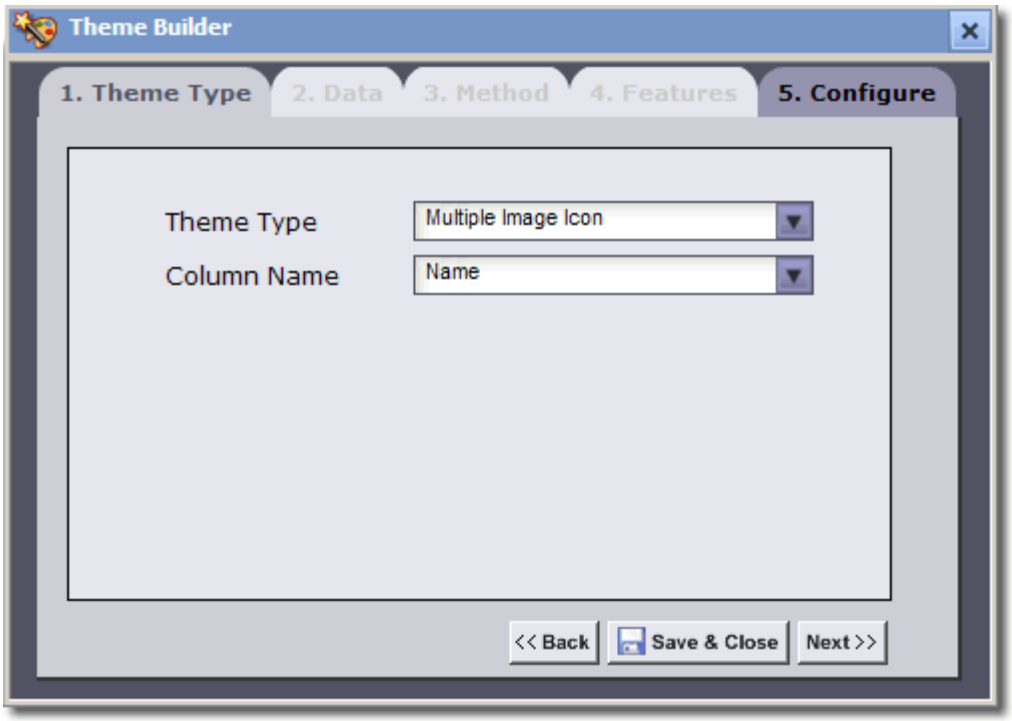


Figure 51. Theme Builder Wizard – 1. Theme Type (Multiple Image Icon).

4. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

5. Select a value from the value list box on the right.

Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take some time to process.

6. Select an image from the Image list box on the left and click the > button. The chosen image will appear next to the value in the value list.

Using the Selection Arrow Buttons

>	Select a value and an image then click this button to associate the image with the value. Repeated clicks of this button will automatically select the next image from left to right.
>>	Select a value and an image then click this button to automatically associate all values with an image. All values below the selected value will be automatically associated with images, starting with the selected image followed by the next image from left to right.
<	Removes associated image from selected value.
<<	Removes all associated images from all values.

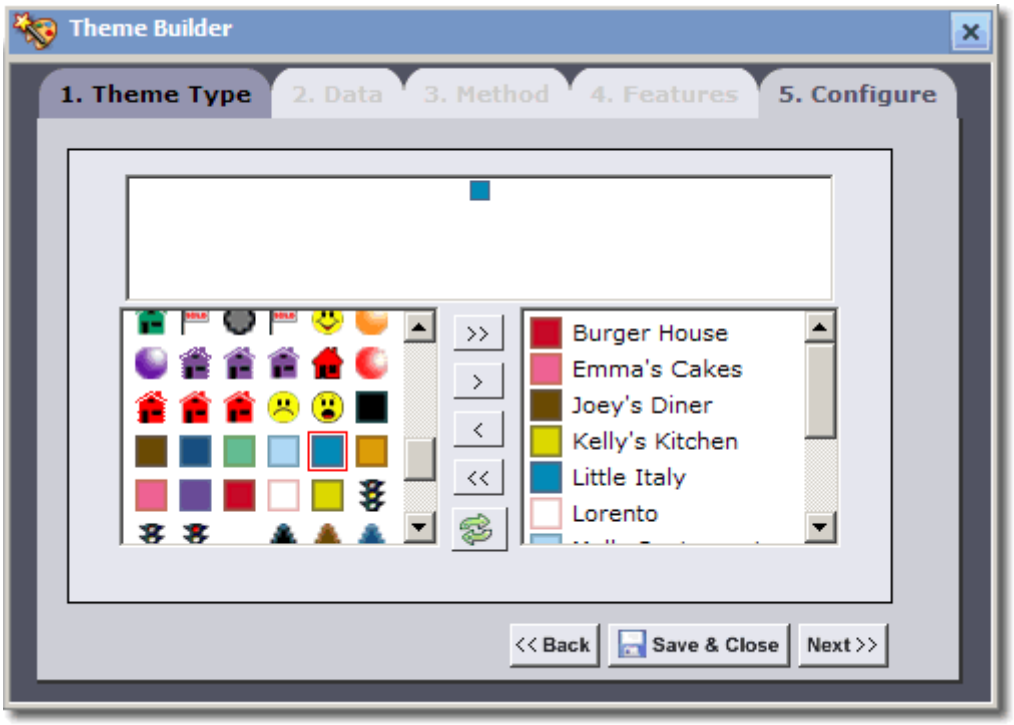


Figure 52. Theme Builder Wizard – 5. Configure (Multiple Image).

Note You do not need to assign an icon for every single column value. Map Intelligence will automatically assign a default icon for all values that have not been configured.

7. Repeat the steps above if you want to assign themes to other columns.

8. Click the **Save & Close** button Save & Close. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Point Layer configuration screen.

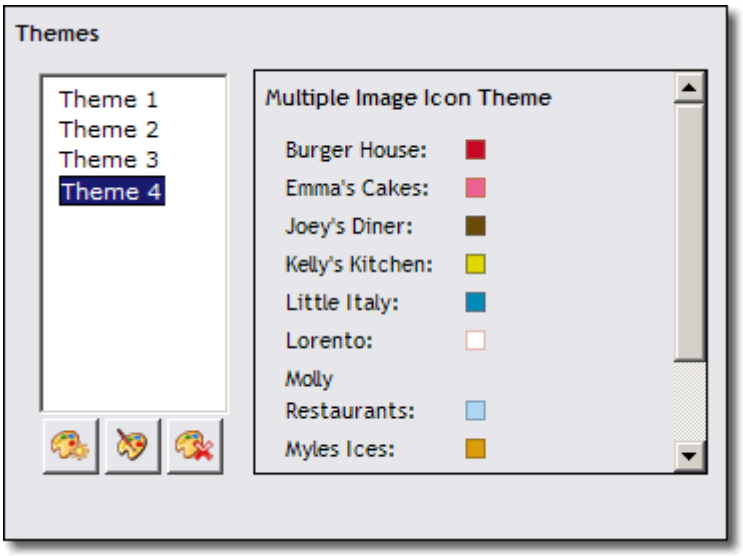


Figure 53. Themes Section showing Multiple Image Icon Theme (Theme 4).

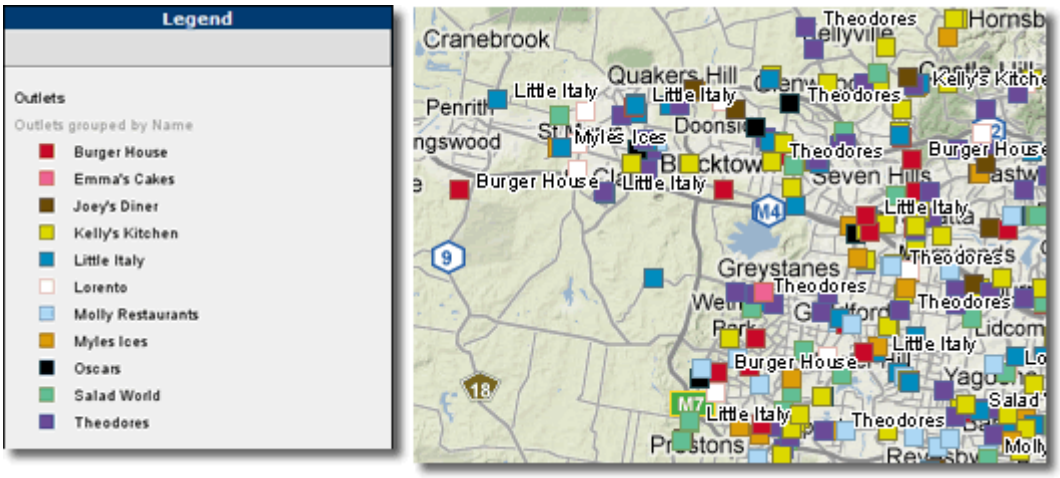


Figure 54. Map View and Legend showing the Multiple Image Icon Theme. In this example see each fast food franchise outlet is represented by a rectangle image, colored circle, colored according to the name of the franchise, for example red for *Burger House* , green for *Salad World* . Each point is labeled according to the Name of the franchise.

Creating an Auto Classification Theme

1. Click the **New Theme** button , the **Theme Builder** wizard will open displaying the **Theme Type** tab.
2. From the **Theme Type** drop-down list select **Auto Classification**.
3. From the **Column Name** drop-down list, select a column to configure (this list contains all numeric data columns).
4. In the **New Column Name,** enter a new column name (This column is used to store the classified values).

   Note Do not use a column name that already exists.

5. From the **Icon Shape** drop-down list, select the shape that you want to use to represent each point in the layer.

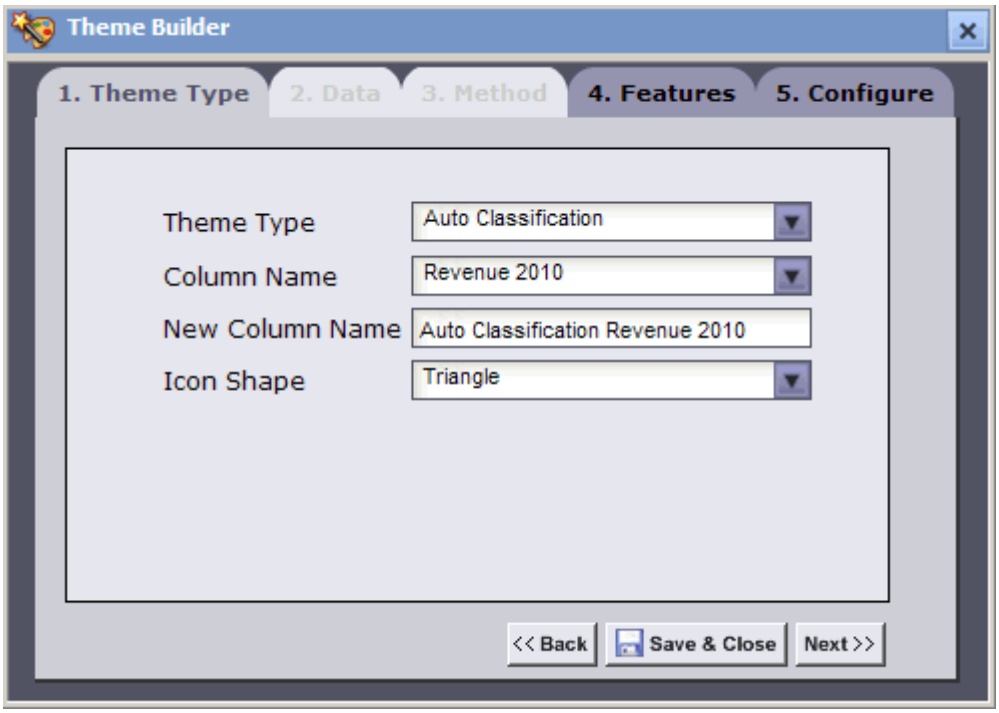


Figure 55. Theme Builder Wizard – 1. Theme Type (Auto Classification).

6. Click the **Features** tab or the **Next** button, the wizard will move to the Features tab.

7. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from two schemes for grouping data values into classes based on how the data values are distributed.

   - **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
   - **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.

8. From the **Class Count** drop-down list, select the number of colors to appear in your shading range.

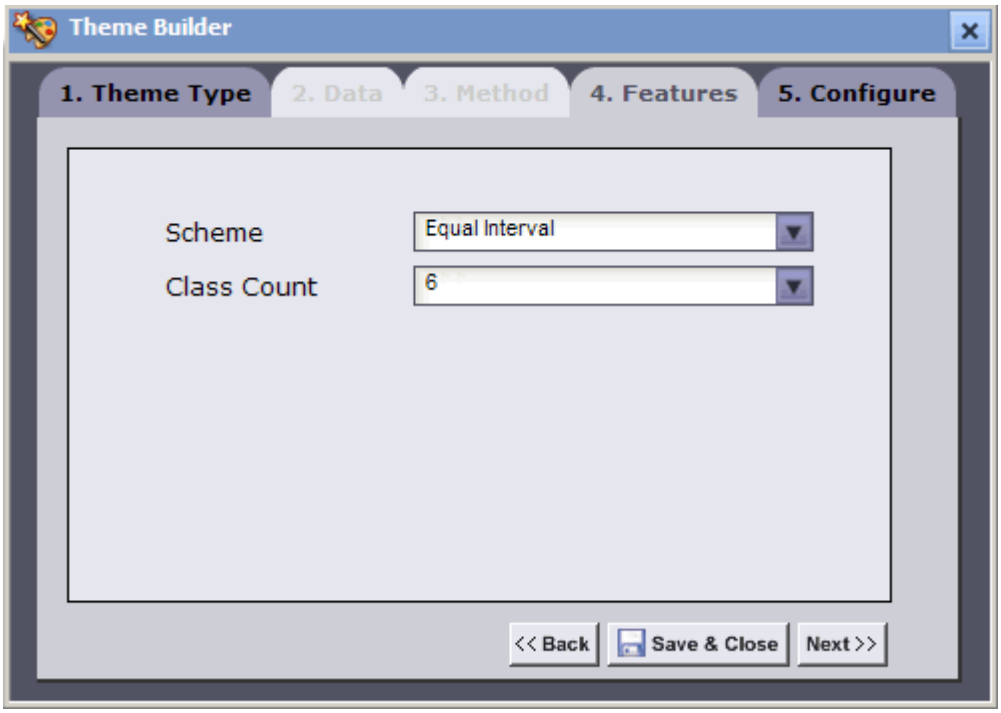


Figure 56. Theme Builder Wizard – 1. Theme Type (Auto Classification).

9. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

10. Click the Class 1 colored rectangle.

11. Select a color from the color picker.

12. Repeat Steps the above steps for each class listed.

Note The colored rectangles will change to the new color after each selection.

Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

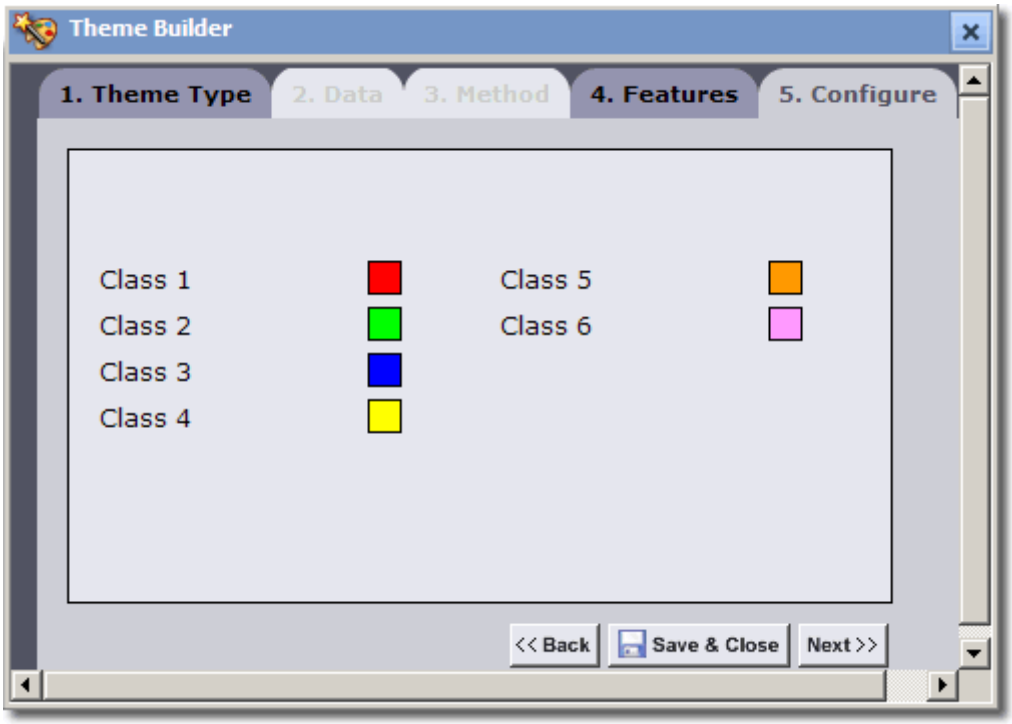


Figure 57. Theme Builder Wizard: Configure Tab (Auto Classification).

Note When displaying class breaks in the legend for auto-classified themes, if the fractional part of the class break is 0 (zero) then the class break is displayed as an integral value with no decimal places.

13. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Color Theme** section of the Relationship Layer configuration screen.

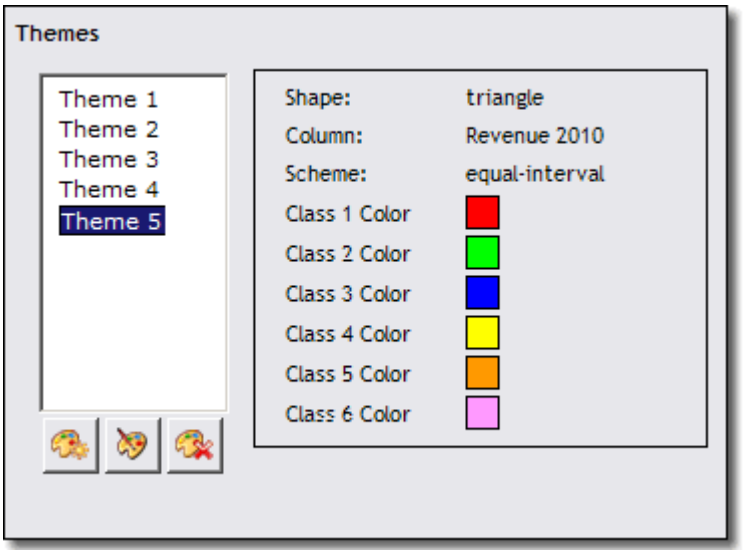


Figure 58. Themes Section showing Auto Classification Theme.

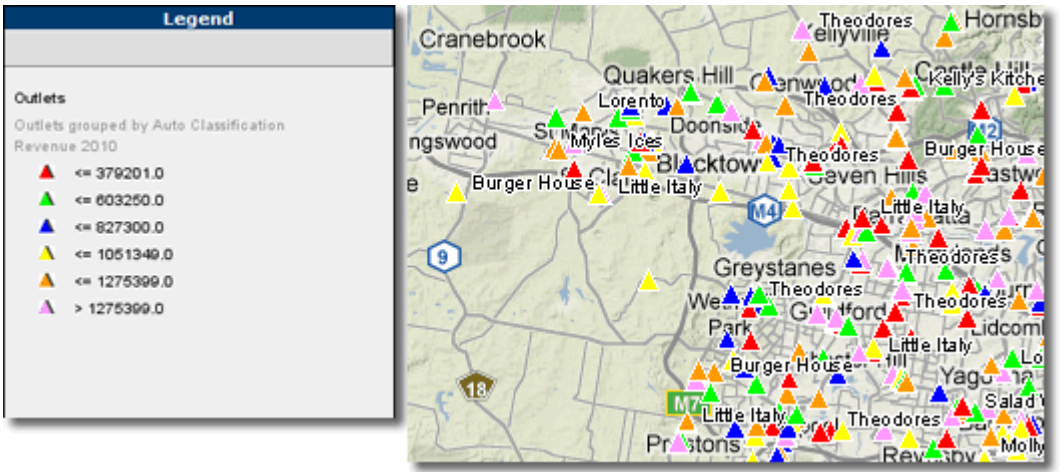


Figure 59. Map View and Legend showing the Auto Classification Theme. In this example, the fast food outlets are themed according to the 2010 Revenue range they fall into, for example all outlets with an annual revenue in 2010 of less than $379,201.00 are shown as a red triangle ▲.

DEFAULT THEME

The Default Theme is the theme that is first displayed when the Mapping Viewer is first accessed, the default theme is the last theme you created.

➢ ***To edit a theme***

1. Select the theme from the theme list then and click the **Theme Edit** button, the **Theme Builder** wizard will open for editing.

➢ ***To delete a theme***

1. Select the theme from the theme list then and click the **Theme Delete** button.

This completes all the theme options available for point layers.

TO TEST YOUR SETTINGS

➢ ***To test the Point Layer configuration***

1. From the **Main Menu**, click the **Test** button Test. A Browser will open displaying your layer configuration. The Layer will also be listed in the **Layer Directory** to the right of the screen.

SAVING THE LAYER

To save the Point Layer configuration

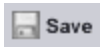
1. From the **Main Menu**, click **Save** button to save your settings.
2. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The Layer will be saved and listed in the **Layer Directory** to the right of the screen.

   The save button will save **all** changes made to **all** configuration screens.

EDITING A LAYER

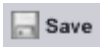
To edit a Point Layer configuration

1. From the **Layer Directory**, click on the plus icon next to **Point Layers.** The Point Layer section will expand.
2. Click on the **Point Layer** you want to edit, the layer configuration screen will open for editing.
3. Save your changes by clicking the click **Save** button  on the **Main Menu**.
4. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

COPYING A LAYER

To copy a Point Layer

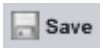
1. From the **Layer Directory**, click on the plus icon next to **Point Layers**. The Point Layer section will expand.
2. Click on the **Point Layer** you want to copy, the layer configuration screen will open.
3. From the **Main Menu**, click the **Copy** button . A copy of the layer will appear.
4. In the **Layer Name** field, enter a new name for the layer.
5. Save your changes by clicking the **Save** button  on the top menu. The new layer will appear in the Layer Directory.
6. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

DELETING A LAYER

To delete a Point Layer

1. From the **Layer Directory**, click on the plus icon next to **Point Layers.** The Point Layer section will expand.
2. Click on the **Point Layer** you want to delete, the layer configuration screen will open.
3. From the **Main Menu**, click the **Delete** button

.
4. Save your changes by clicking the **Save** button 

on the **Main Menu**.
5. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

The save button will save **all** changes made to **all** configuration screens.

NOTE ON DATA FORMAT

Map Intelligence, by default, will place commas in numbers greater than 999. You can change the format by specifying the column format in the universe. This only applies to columns with numeric values.

CONFIGURE RELATIONSHIP LAYERS

Note

- For a description of Relationship Layers, see Layer Types, Relationship Layers
- You will need to create at least one Point Layer before you can create a Relationship Layer.

To open the Relationship Layer configuration screen

1. Click on the **Relationship Layers** tab

, the Relationship Layer configuration screen will appear.

2. Click the **New Layer** button

. This clears the fields and allows you to set the properties for a new layer.

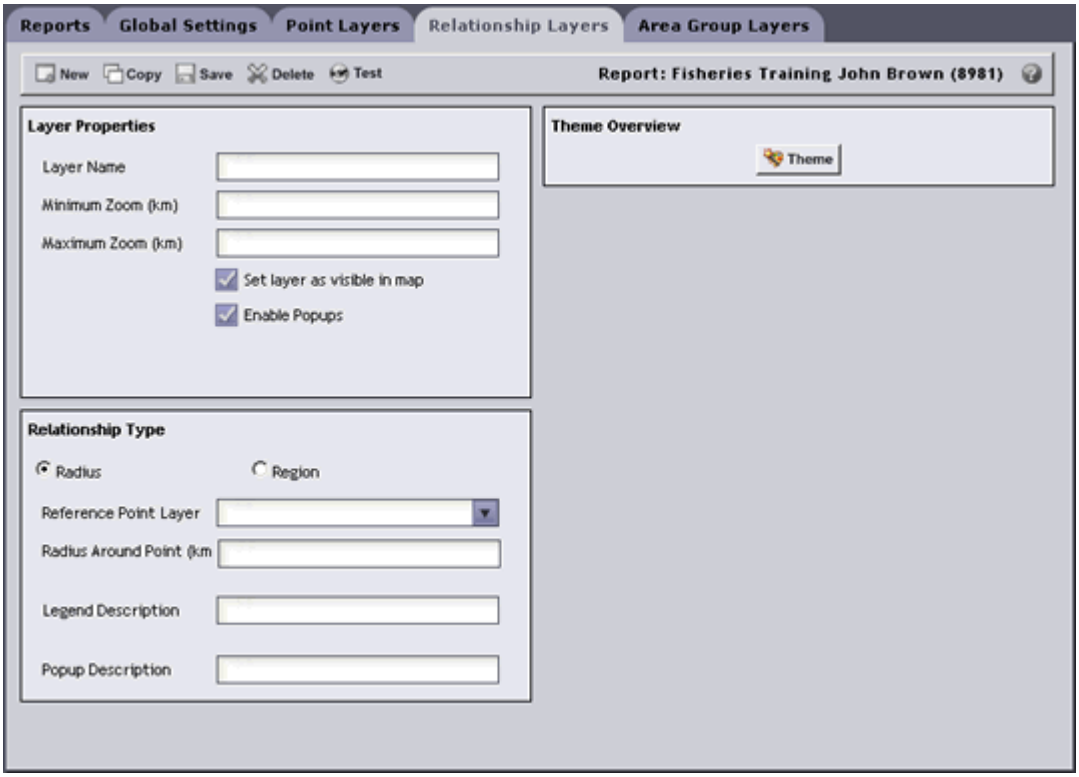


Figure 60. Relationship Layer configuration screen.

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** field, enter a title for the layer.

   Note: Layer names are trimmed (spacing characters at the beginning or end are removed) and cannot contain double or single quotes. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom** and **Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum values.

3. Select the **Set Layer as Visible** in Map checkbox if you wish this particular layer to be visible when you first access the Mapping Viewer.

4. Select the **Enable Popups** checkbox if you wish information popups to be enabled for the layer when you first access the Mapping Viewer.

   Note: Information Popup boxes provide further information about a region when you move your mouse over the region on the map.

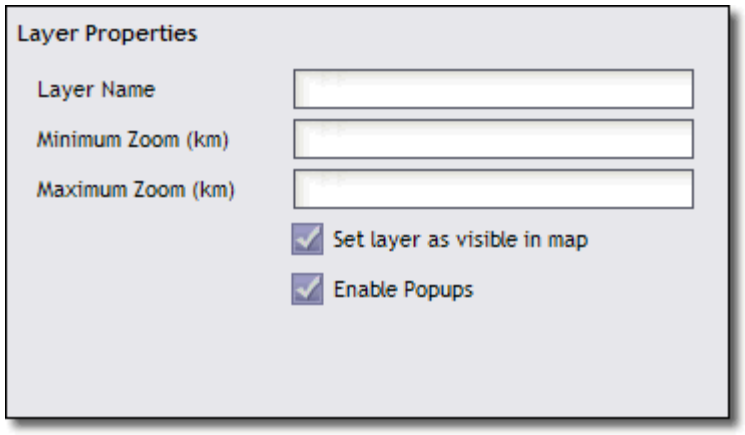


Figure 61. Layer Properties section.

RELATIONSHIP TYPE SECTION

The **Relationship Type** section allows you to specify the type of relationship to display on the map.

- The **Radius** option displays the relationship between two Point layers as color-coded or hatched circles around a particular point (see Radius relationship layers on page 9.)

- The **Region** option displays the relationship between a Point layer and a built-in map layer as color-coded or hatched regions on the map layer (see Region Relationship layers on page 10).

Selecting the Radius option

1. Select the **Radius** radio button.

2. From the **Reference Point Layer** drop-down list, select the point layer that you want to base the relationship on. Points in this layer become the center point of the shaded circles.

3. In the **Radius Around Point** text box, enter the radius of the circle you want to display on the map.

   Note The unit of measurement will be the unit of measurement selected in the Global Settings, (Preferences) configuration screen.

4. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank a description will be generated by Map Intelligence.

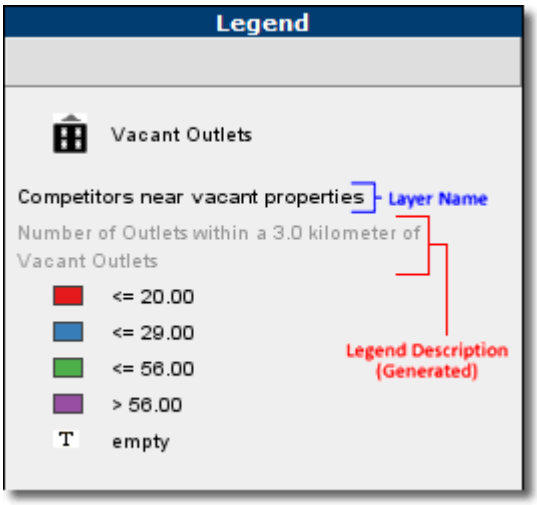


Figure 62. Legend showing a Map Intelligence generated description.

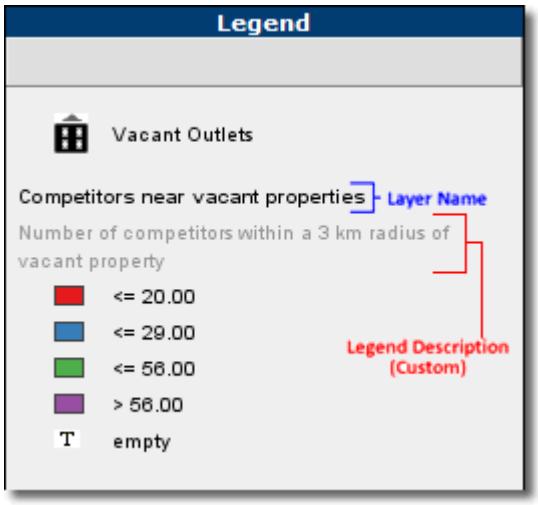


Figure 63. Legend showing a customized description.

5. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region (see Figure 73).
${value}	Will be replaced with the value for the region determined by theme (see Creating Themes for Relationship Layers on page 58).
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

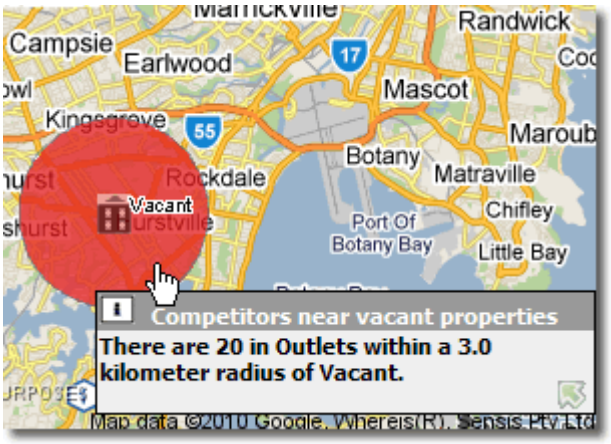


Figure 64. Information popup displaying a Map Intelligence generated Popup description.

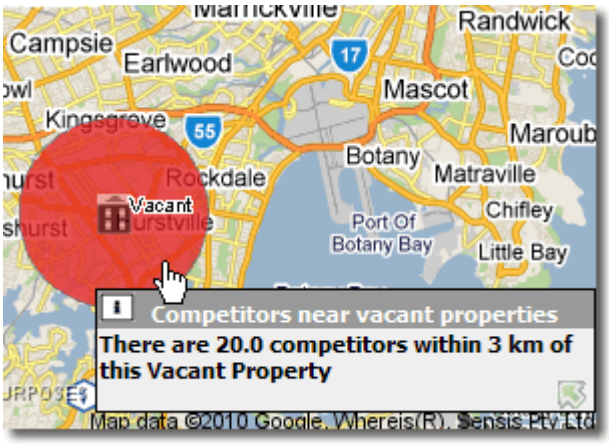


Figure 65. Customized Popup description. In this example the following description was entered into the Popup Description text box.

There are ${value} competitors within 3 km of this ${label} Property

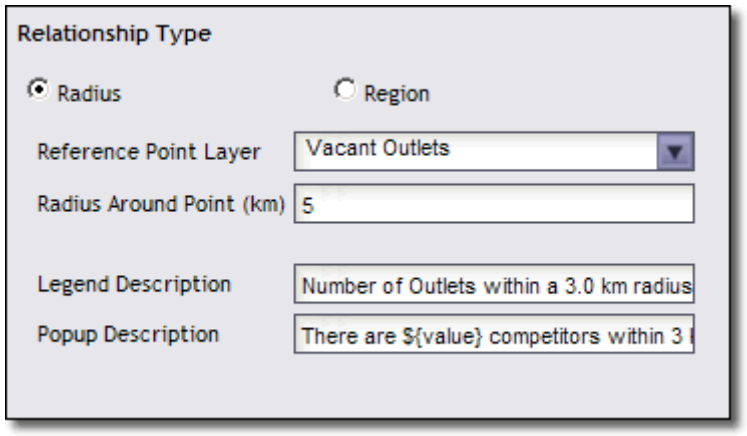


Figure 66. Relationship Type – Radius Option

Selecting the Region option

1. Select the **Region** radio button.

2. From the **Map Layer to Color Code** drop-down list, select the built-in map layer that you want to shade.

Note

- To Refresh the *Map Layer to Color Code* drop-down list, click the Refresh button .
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer will be covered by the selected color or hatch.

3. From the **Label Column** drop-down list, select the column in the map layer that contains the values to be used as labels for the regions.

Note Map Intelligence IGP users: Labels will not be visible if the server setting *Show Region Built-in Label* has been set to *No*. Refer to the *Settings* section of the *Map Intelligence Server Tools and Administration Guide*.

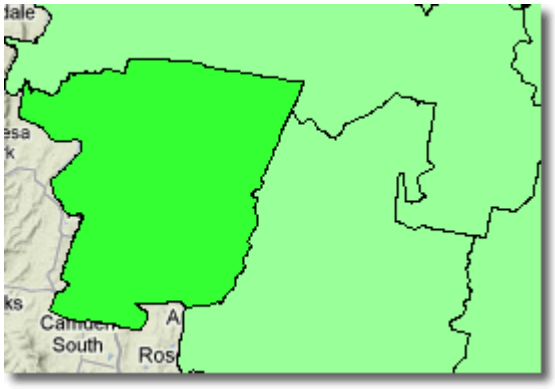


Figure 67. When no Label column has been selected, no labels appear on the map.

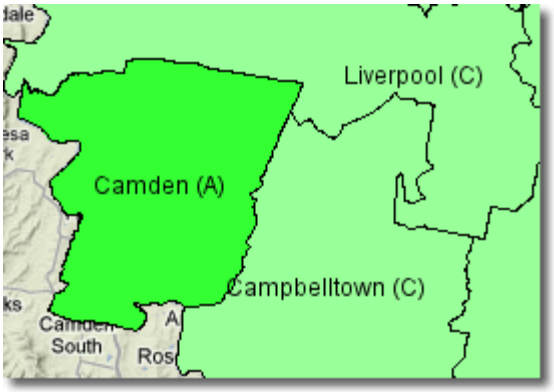


Figure 68. In this example the half degree column label was selected, now each half degree grid square on the map displays its code number label.

4. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank, a description will be generated by Map Intelligence.

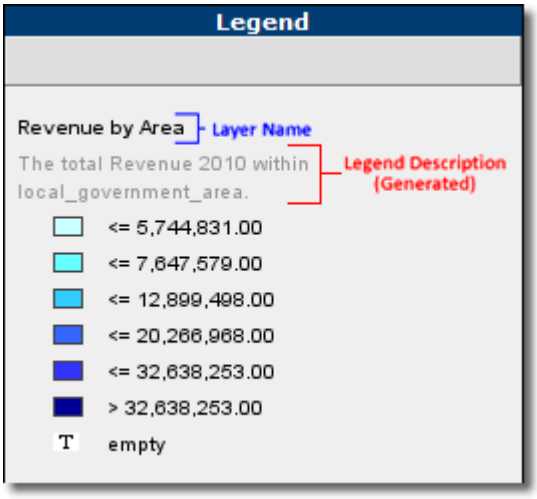


Figure 69. Legend showing a generated description.

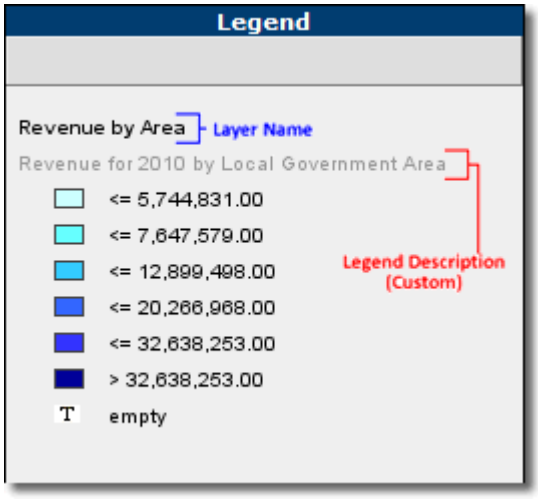


Figure 70. Legend showing a customized description.

5. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region (see Figure 73).
${value}	Will be replaced with the value for the region determined by the theme (see Creating Themes for Relationship Layers on page 58) .
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

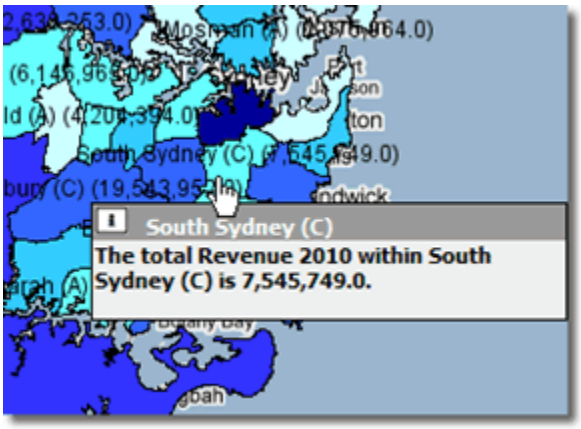


Figure 71. Information popup displaying a Map Intelligence generated Popup description

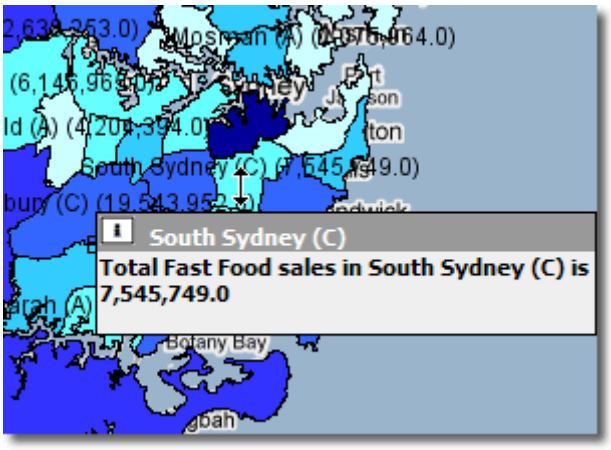


Figure 72. Customized Popup description. In this example the following description was entered into the Popup Description text box.

Total Fast Food sales in ${label} is ${value}

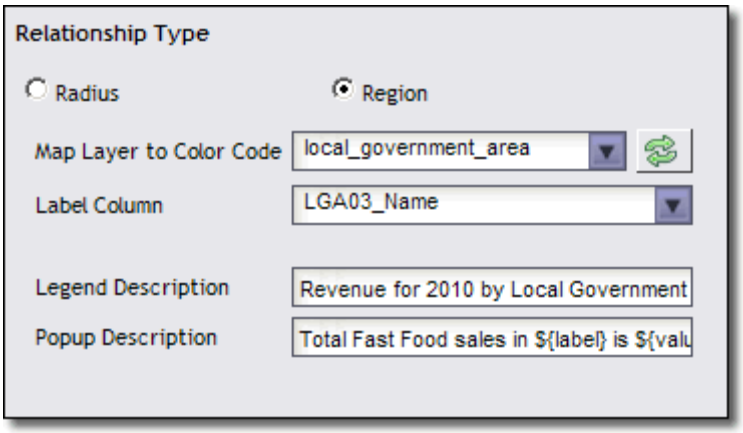


Figure 73. Relationship Type – Region Option

CREATING THEMES FOR RELATIONSHIP LAYERS

Creating themes for Relationship Layers requires you to specify threshold conditions based on a Numeric or String aggregation using the **Theme Builder** wizard on the Relationship Layer configuration screens.

Note Hatches for **Radius** Relationship layers are not available for the current version of Map Intelligence IMS.

NUMERIC AGGREGATION

Map Intelligence allows you to perform a function on values from a specified column. The specified built-in map layer or a circle around a point will then be shaded according to the resulting values. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

Note Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the Theme Select option from the Mapping Viewer (refer to the *Map Intelligence Mapping Viewer User Manual*.

Creating a themes based on a Numeric Aggregation

1. Click the **Theme** button

, the **Theme Builder** wizard will open, displaying the **Theme Type** tab.

2. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the reference layer.

3. From the **Column** drop down list, select the Column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.

4. Select the **Numeric** radio button.

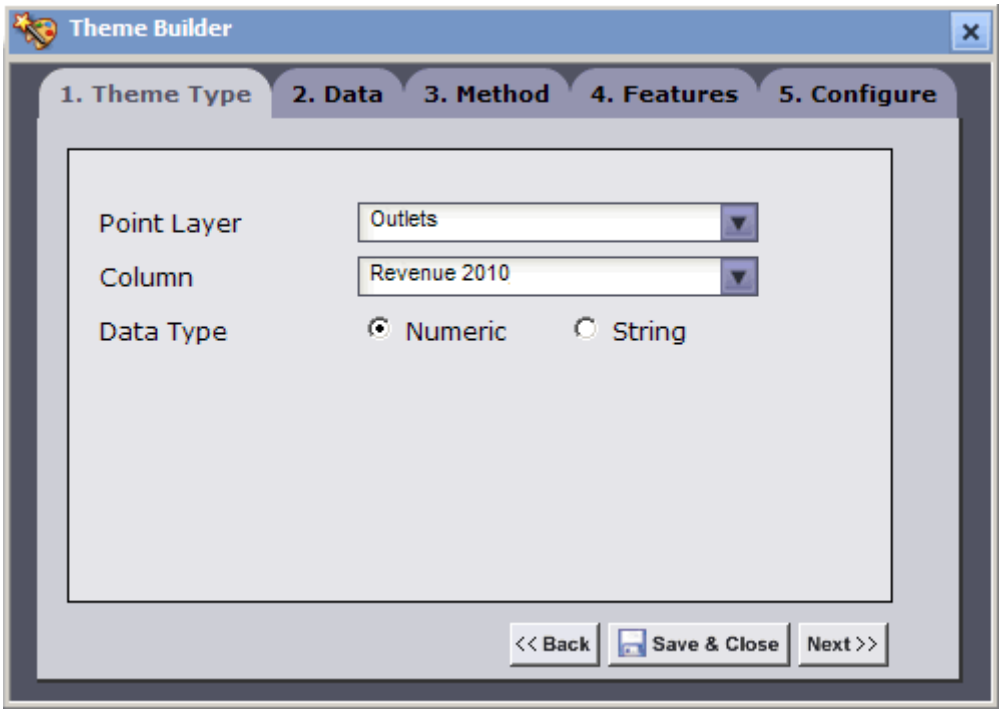


Figure 74. Theme Builder Wizard: Theme Type Tab (Numeric).

5. Click the **Data** tab or the **Next** button, the wizard will move to the Data tab.

6. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

7. For the **Calculation** option, click either the by **Value** or by **Percentage** radio button.

   The aggregates can be used as the raw aggregate value or as a percentage of the total aggregate over the Point Layer.

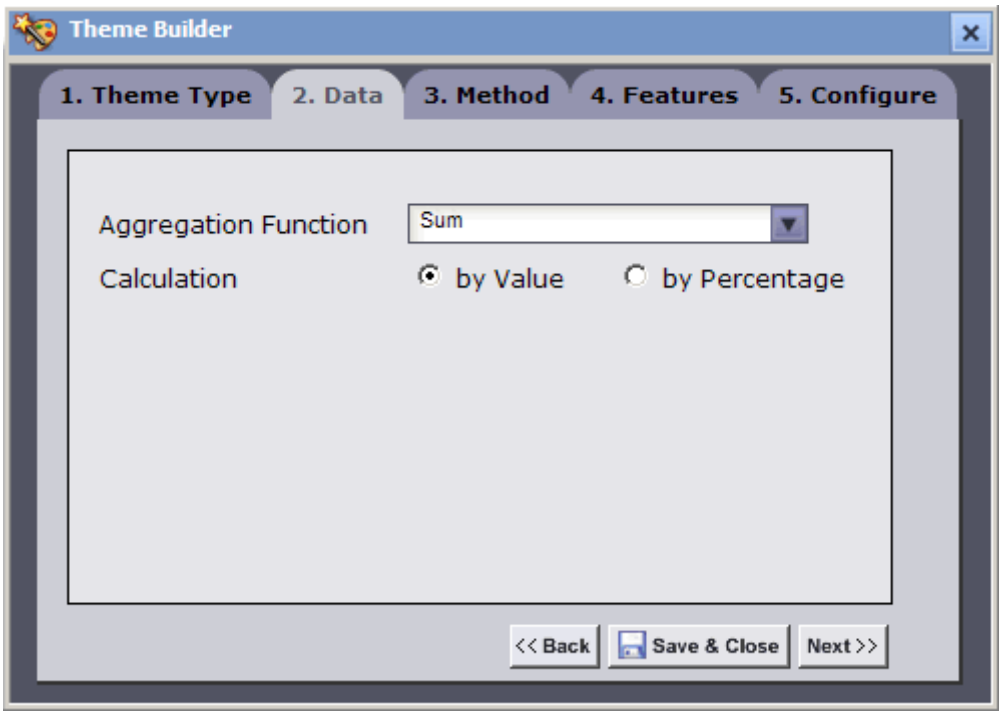


Figure 75. Theme Builder Wizard: Data Tab (Numeric).

8. Click the **Method** tab or the **Next** button, the wizard will move to the **Method** tab.

   There are two methods for applying themes:

   - Automatic
   - Manual

AUTOMATIC METHOD

1. For **Theme Method**, click the **Automatic** radio button.

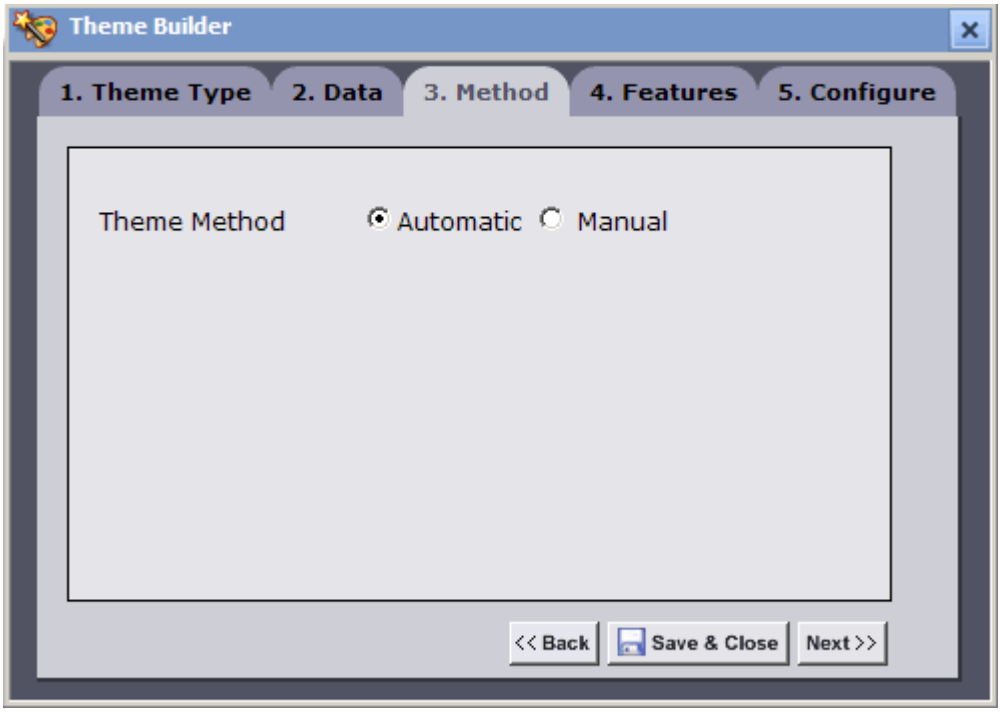


Figure 76. Theme Builder Wizard: Method Tab (Numeric- Automatic).

2. Click the **Features** tab or the **Next** button, the wizard will move to the Features tab.

3. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from three schemes for grouping data values into classes based on how the data values are distributed.

   - **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
   - **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
   - **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. From the **Class Count** drop-down list, select the number of colors to appear in your shading range.

5. If **Equal Interval** was selected for **Scheme**, for **Scale**, click either the **Linear** or **Logarithmic** radio button.

6. If **Standard Deviation** was selected for **Scheme**, for **Multiplier** enter the multiplying factor.

There are three options for selecting the **Fill Option**:

- **Specific Colors:** Allows you to specify a particular color for each class.
- **Color Range:** Allows you to choose a start and end color.
- **Hatches:** Allows you to specify a particular hatch for each class.

SELECTING SPECIFIC COLORS

1. Click the **Specific Colors** radio button.

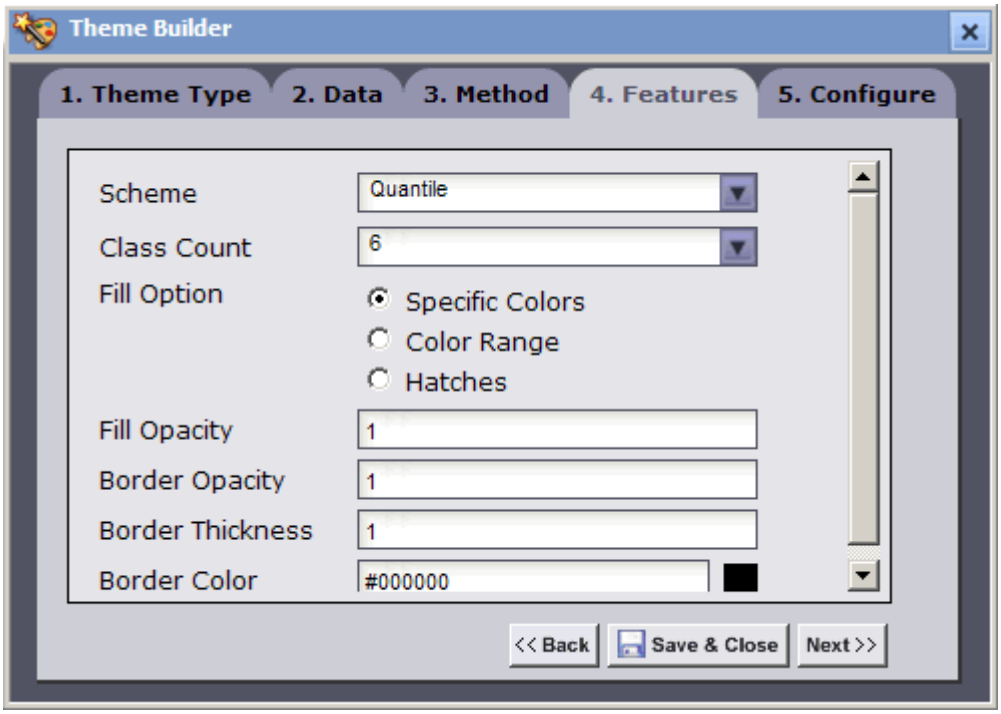


Figure 77. Theme Builder Wizard: Features Tab (Numeric- Automatic – Specific Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
7. Click the Class 1 colored rectangle.
8. Select a color from the color picker.

9. Repeat Steps the above steps for each class listed.

10. Click the **Empty Color** colored rectangle.

11. Select a color for any region that does not contain any values.

The colored rectangles will change to the new color after each selection.

If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

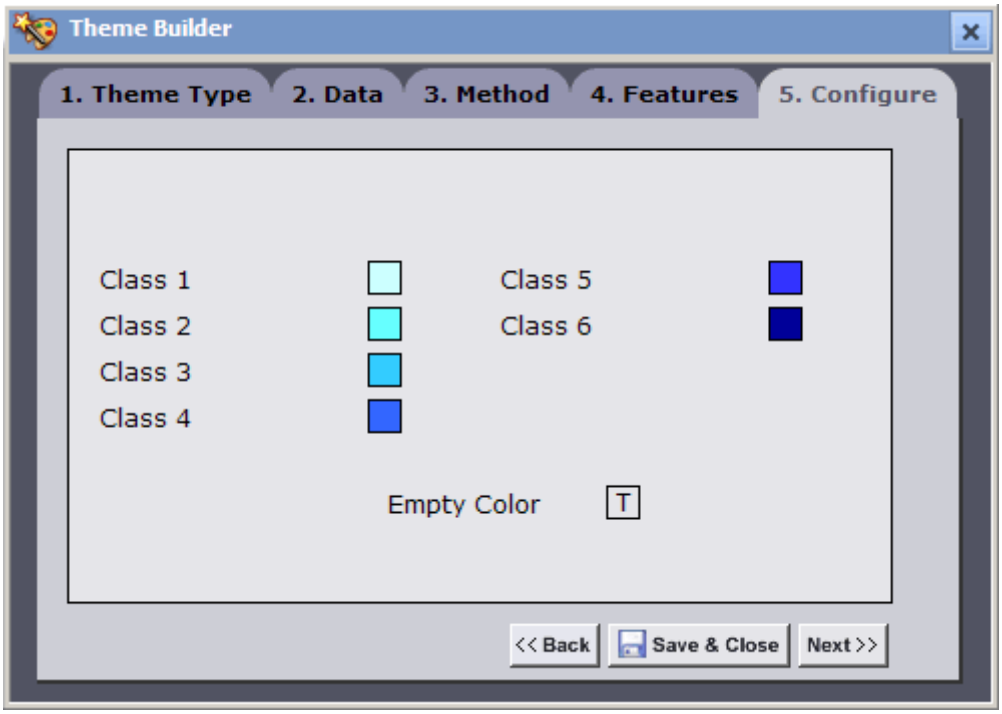


Figure 78. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Specific Colors).

12. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Color Theme** section of the Relationship Layer configuration screen.

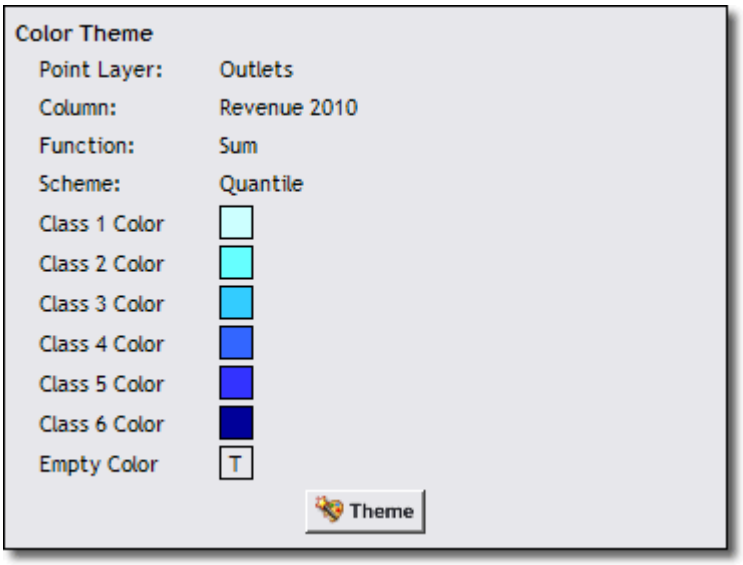


Figure 79. Themes Section showing Specific Color Theme.

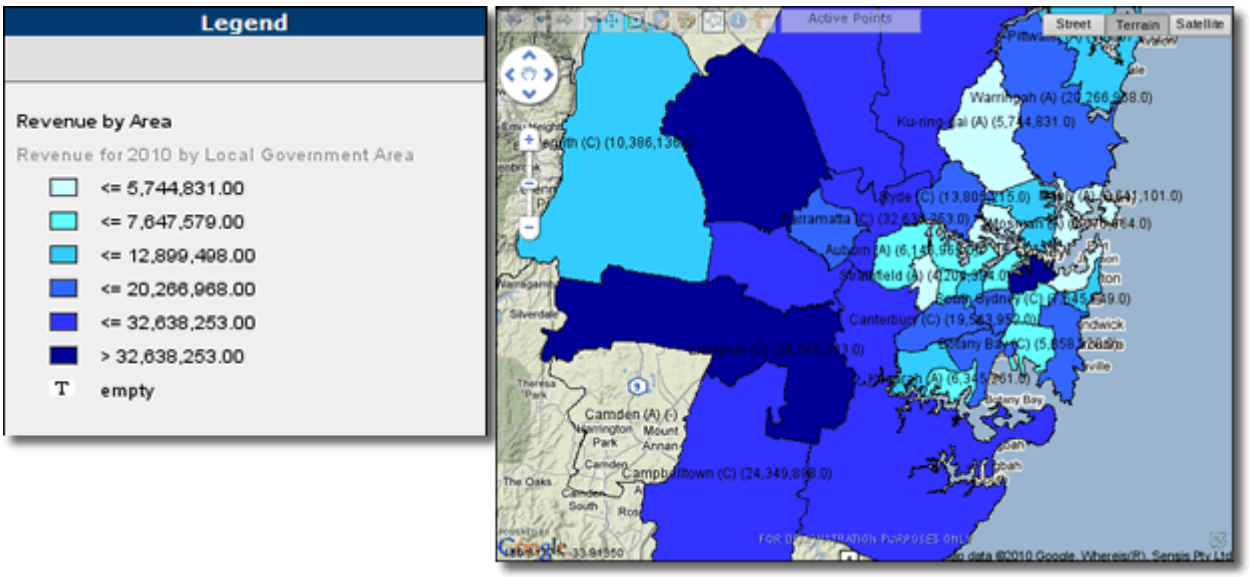


Figure 80. Region Relationship Layer Map View and Legend showing Specific Color Theme.

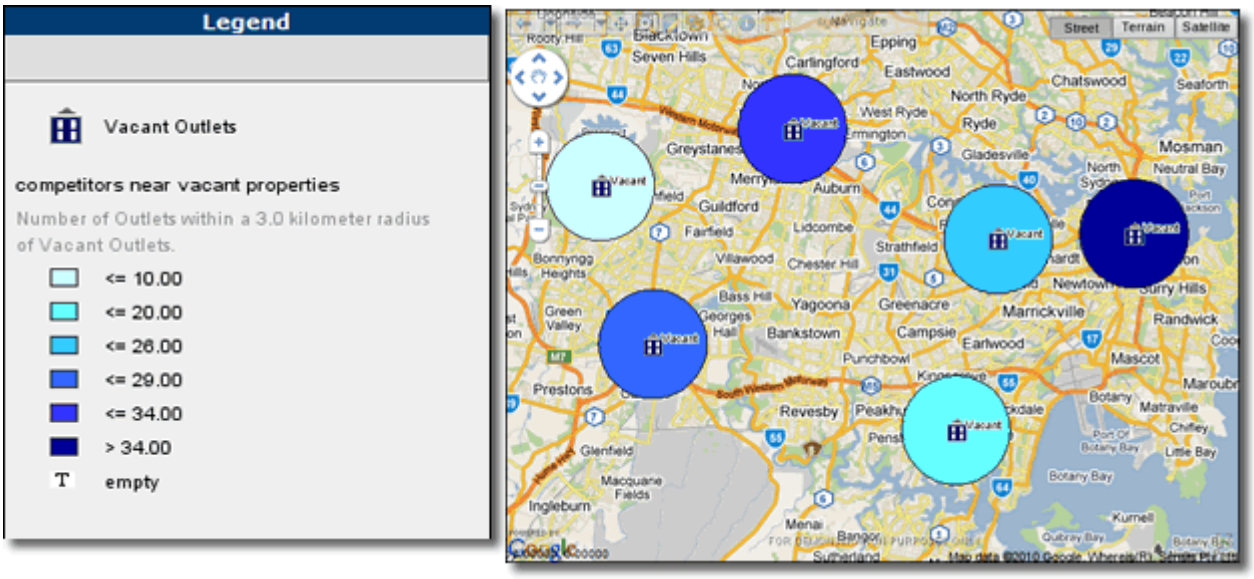


Figure 81. Radius Relationship Layer Map View and Legend showing Specific Color Theme.

SELECTING COLOR RANGE

1. Click the **Color Range** radio button.

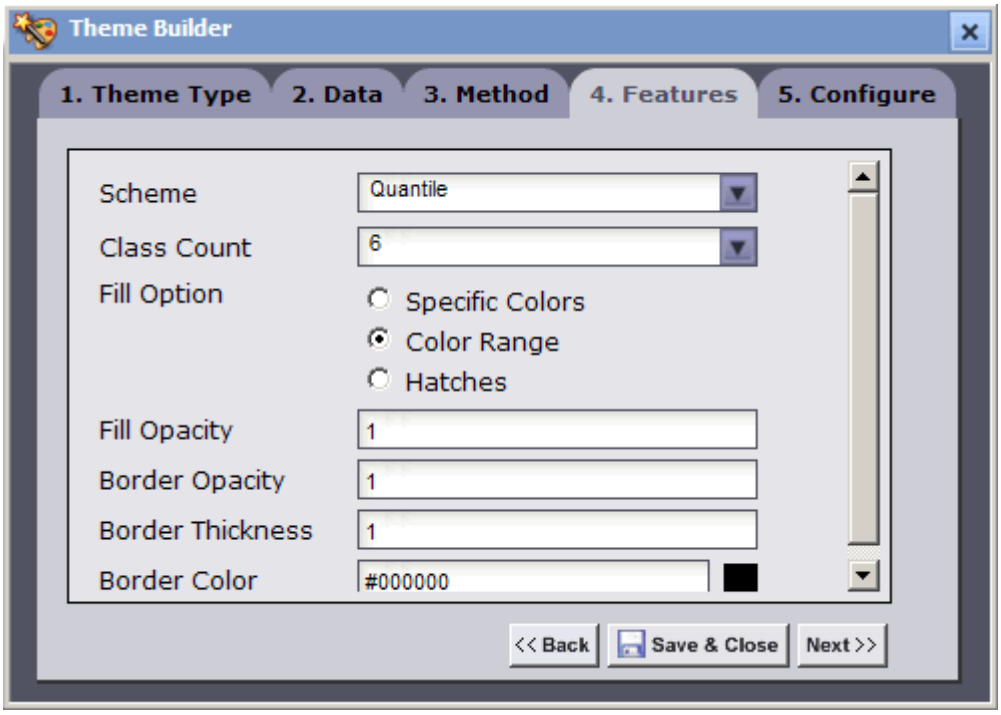


Figure 82. Theme Builder Wizard: Features Tab (Numeric- Automatic – Color Range).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

   Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

7. Click the **Start Color** colored rectangle.

8. Select the start color from the color picker and click **OK**.

9. Click the **End Color** colored rectangle.

10. Select the end color from the color window and click **OK**.

11. Click the **Empty Color** colored rectangle.

12. Select a color for any region that does not contain any values and click **OK**.

    Note The colored rectangles will change to the new color chosen after each selection.

    Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

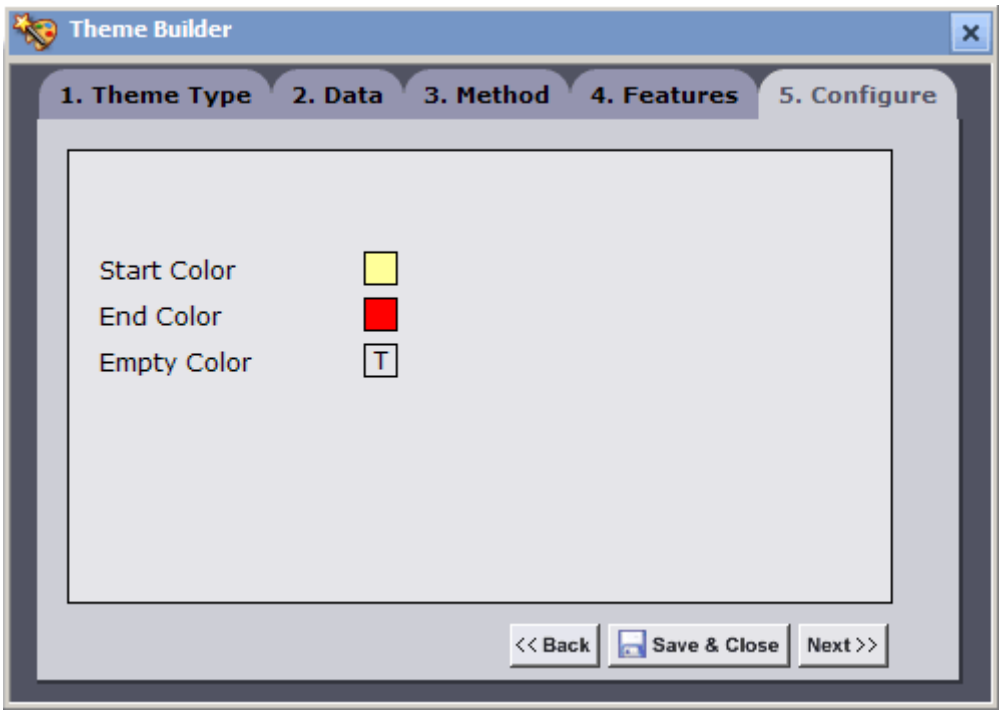


Figure 83. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Color Range).

13. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Relationship Layer configuration screen.

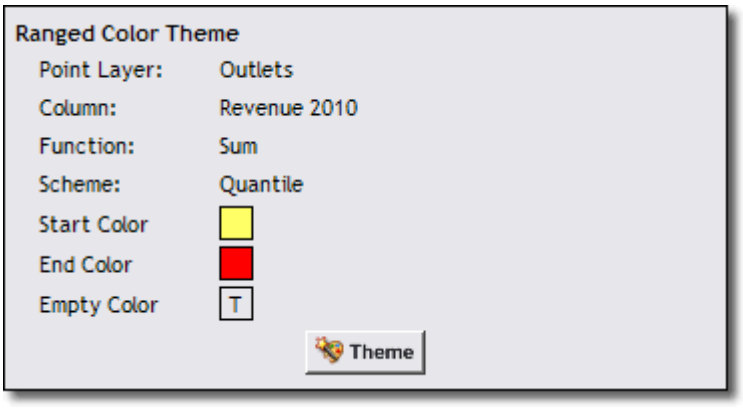


Figure 84. Themes Section showing Ranged Color Theme.

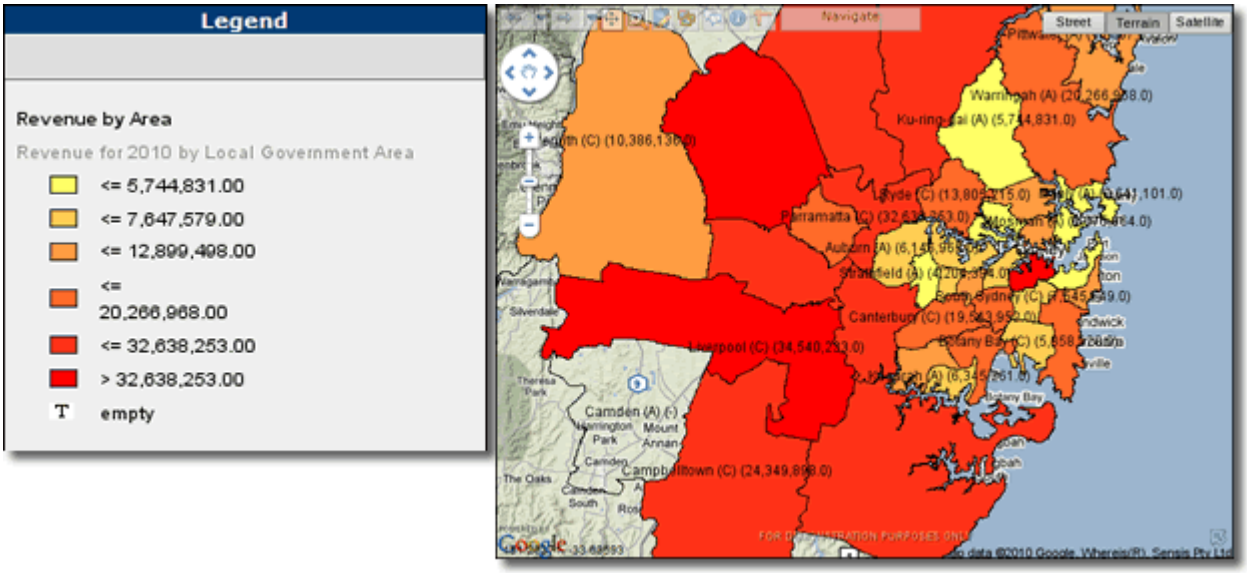


Figure 85. Region Relationship Layer Map View and Legend showing Ranged Color Theme (Yellow to Red).

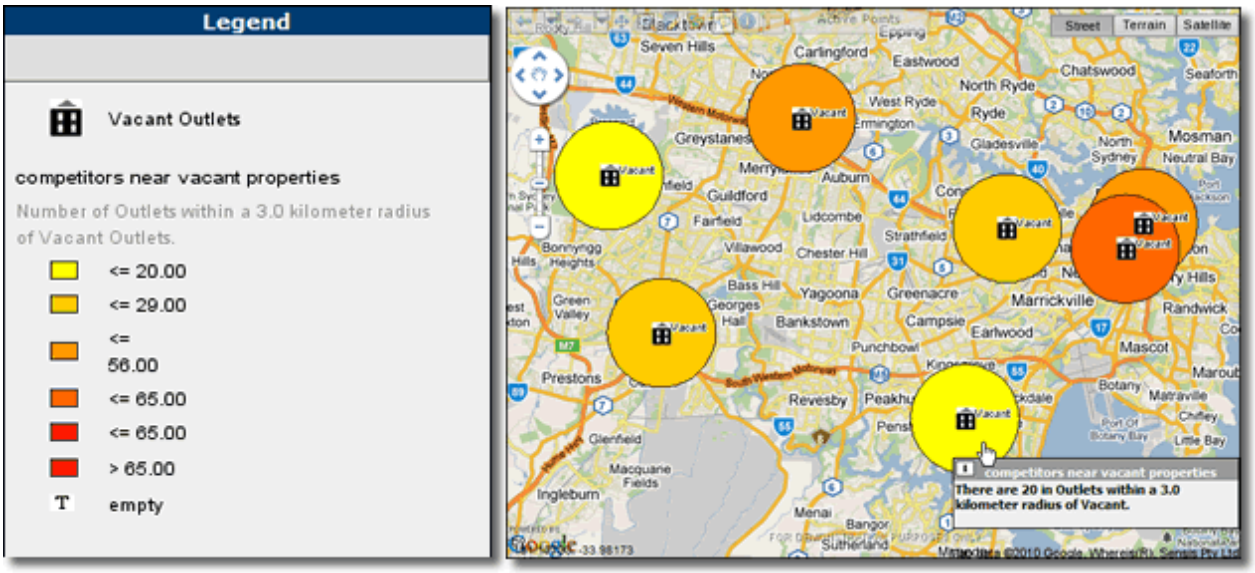


Figure 86. Radius Relationship Layer – Example Map View and Legend showing Color Range – Custom Colors (Yellow to Red).

SELECTING HATCHES

1. Click the **Hatches** radio button.

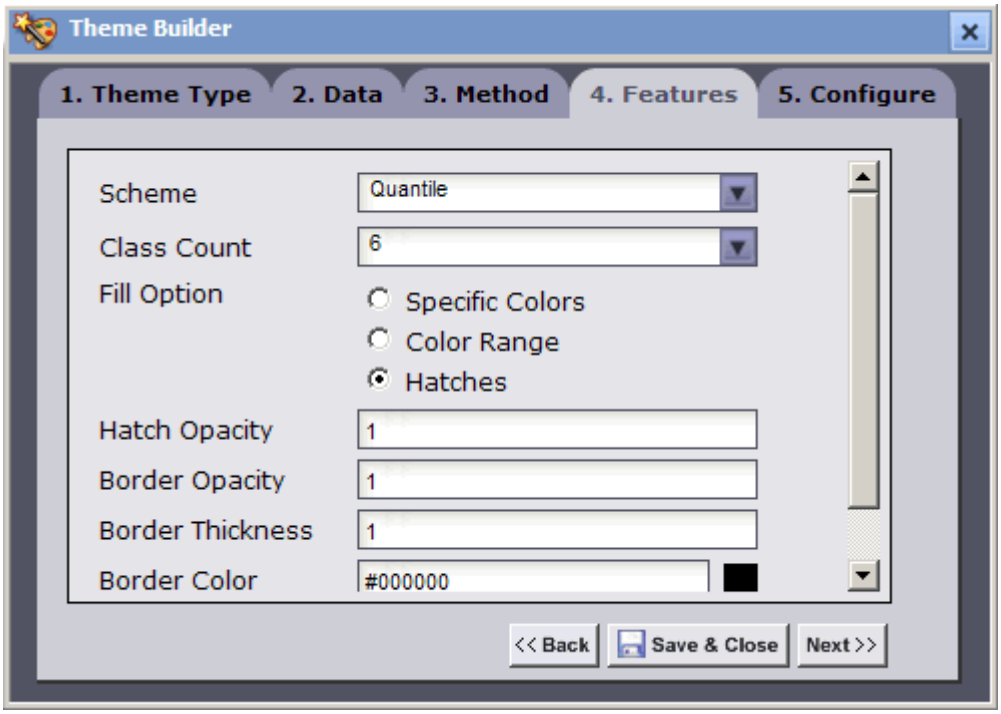


Figure 87. Theme Builder Wizard: Features Tab (Numeric- Automatic – Hatches).

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).
6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
8. Click the **Class 1** hatched rectangle.
9. Select a hatch from the picker.
10. Repeat steps the above steps for each class listed.

11. Click the **Empty Hatch** hatched rectangle.

12. Select a hatch for any region that does not contain any values and click **OK**.

Note The hatched rectangles will change to the new hatch after each selection.

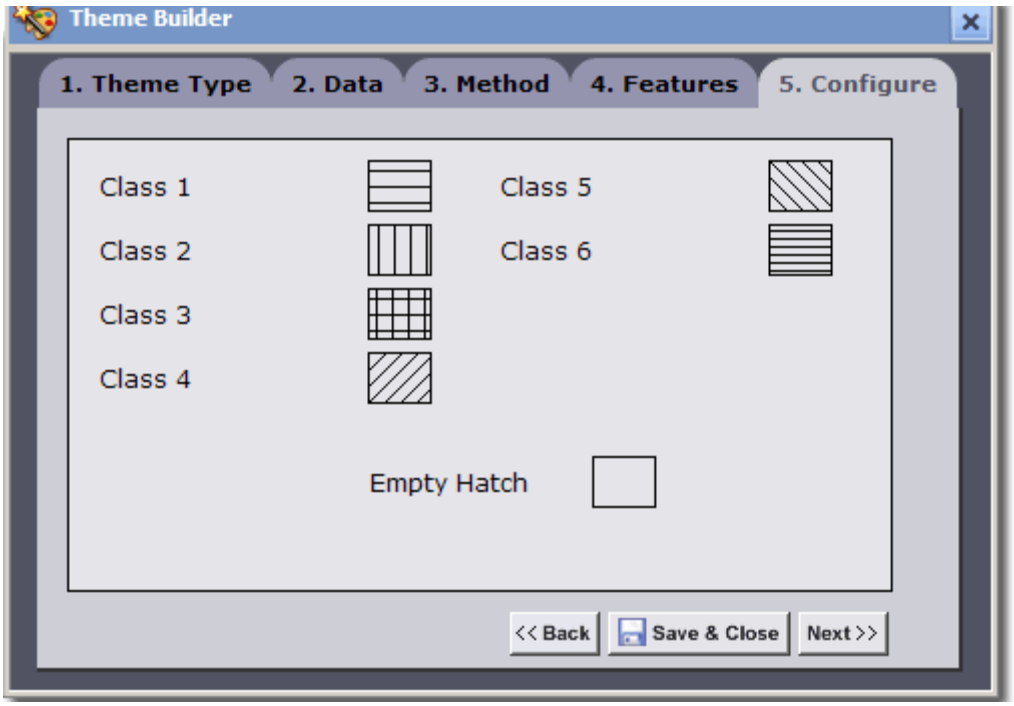


Figure 88. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Hatches).

13. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Hatch Theme Section** of the Relationship Layer configuration screen.

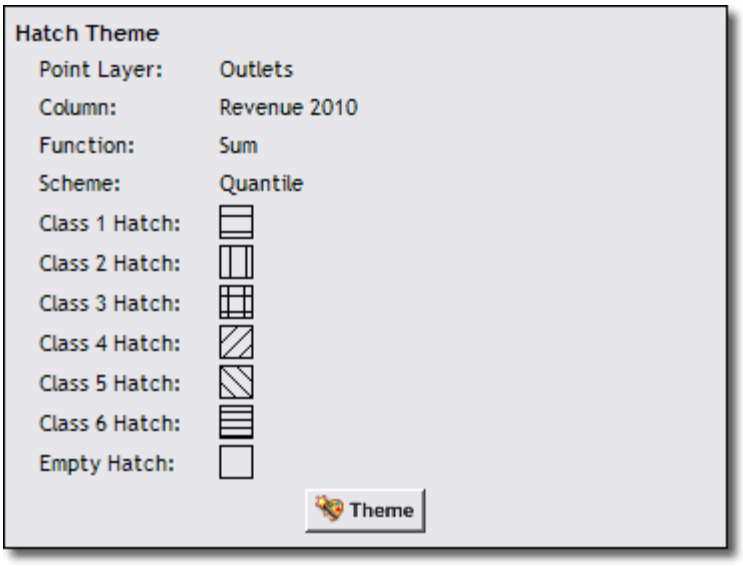


Figure 89. Themes Section showing Hatched Theme.

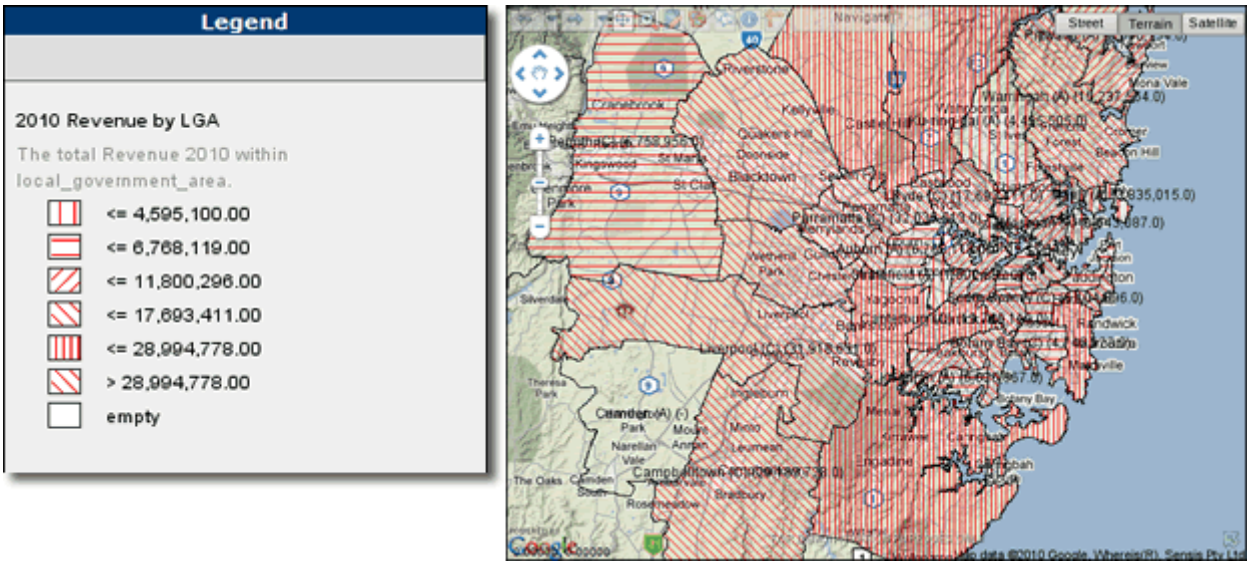


Figure 90. Region Relationship Layer Map View and Legend showing Hatched theme (Red).

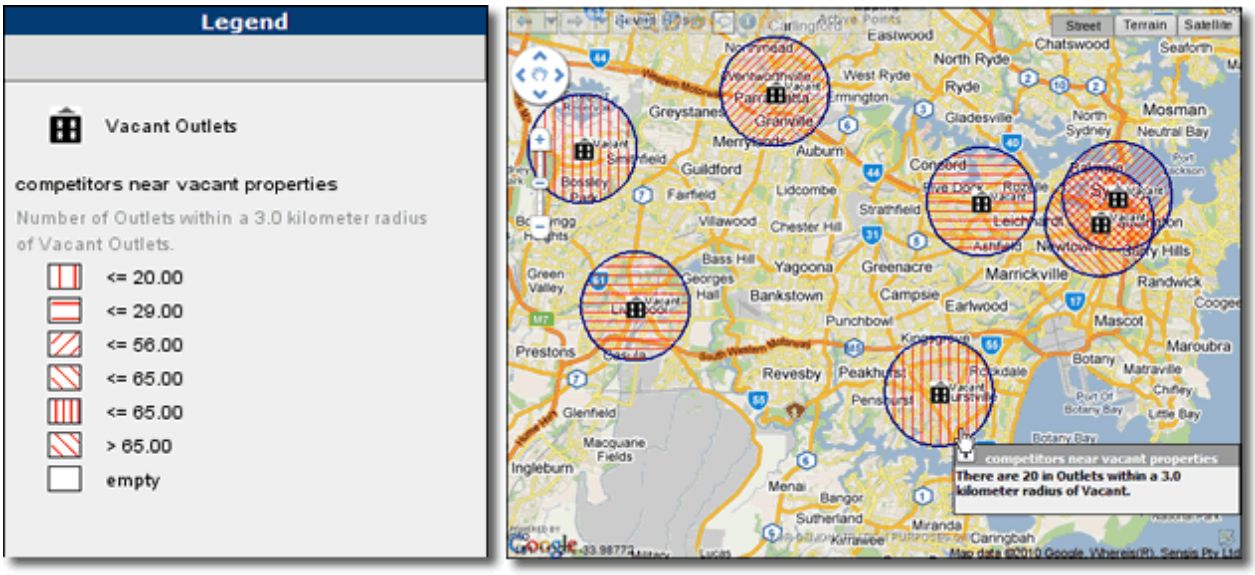


Figure 91. Radius Relationship Layer – Example Map View and Legend showing Hatched theme (Red).

MANUAL METHOD

1. From the **Method** tab, select the **Manual** radio button.

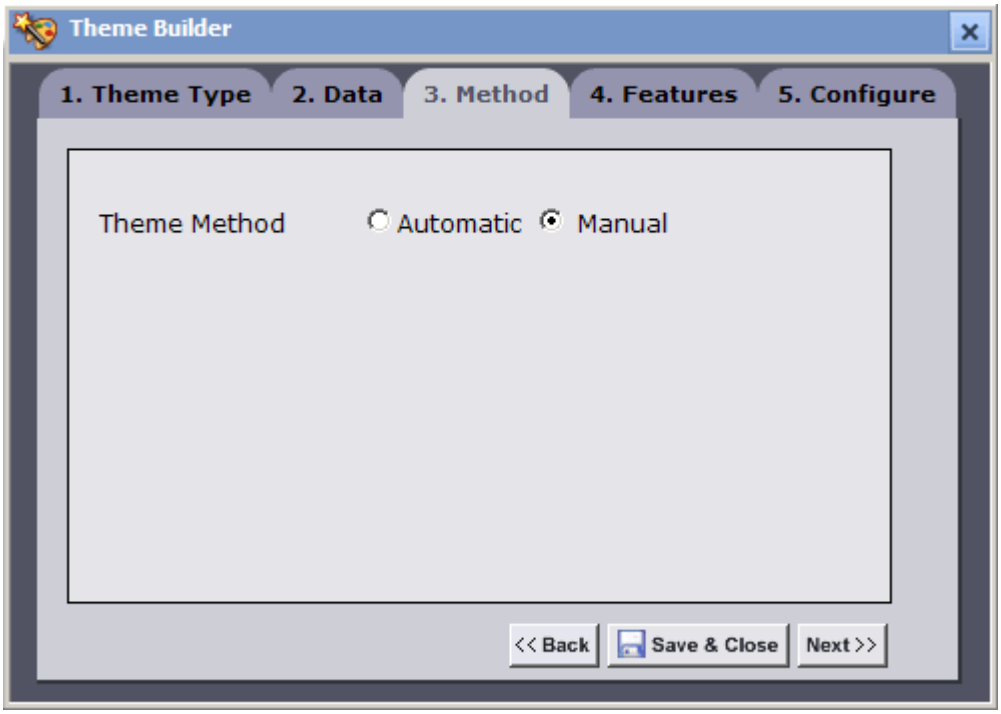


Figure 92. Theme Builder Wizard: Method Tab (Numeric-Manual).

2. Click the **Features** tab or the **Next** button, the wizard will move to the **Features** tab.

   There are two options for selecting the **Fill Option**:

   - **Colors:** Allows you to specify a particular color.
   - **Hatches**. Allows you to specify a particular hatch.

SELECTING COLORS

1. Click the **Colors** radio button.

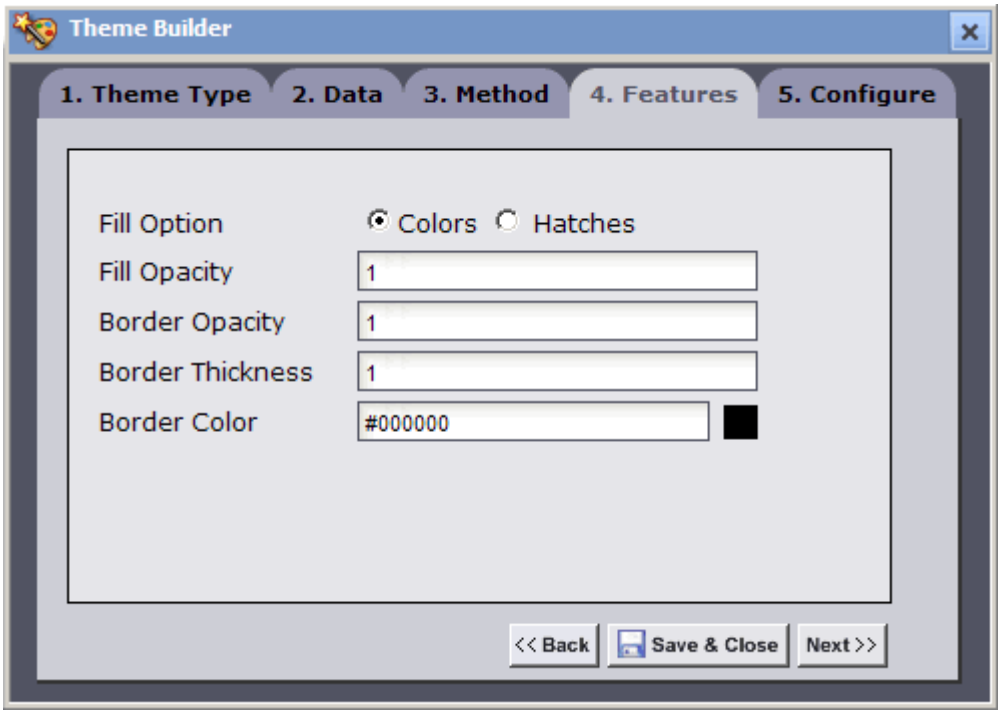


Figure 93. Theme Builder Wizard: Features Tab (Numeric-Manual-Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

   Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

7. Enter a threshold value in the top text box.

8. Click the rectangle next to the text box.

9. Select a color from the color picker that you want to associate with the threshold value.

   The selected threshold value and associated color will appear in the preview window list.

10. Configure all other threshold conditions that you wish to associate with a color.

11. Click the **Values Outside Threshold** rectangle, then select a color from the color picker to represent any other values that have not been assigned a specific color.

12. Click the **Empty Values** rectangle, then select a color from the color picker to represent any region or circle that does not contain any values.

13. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

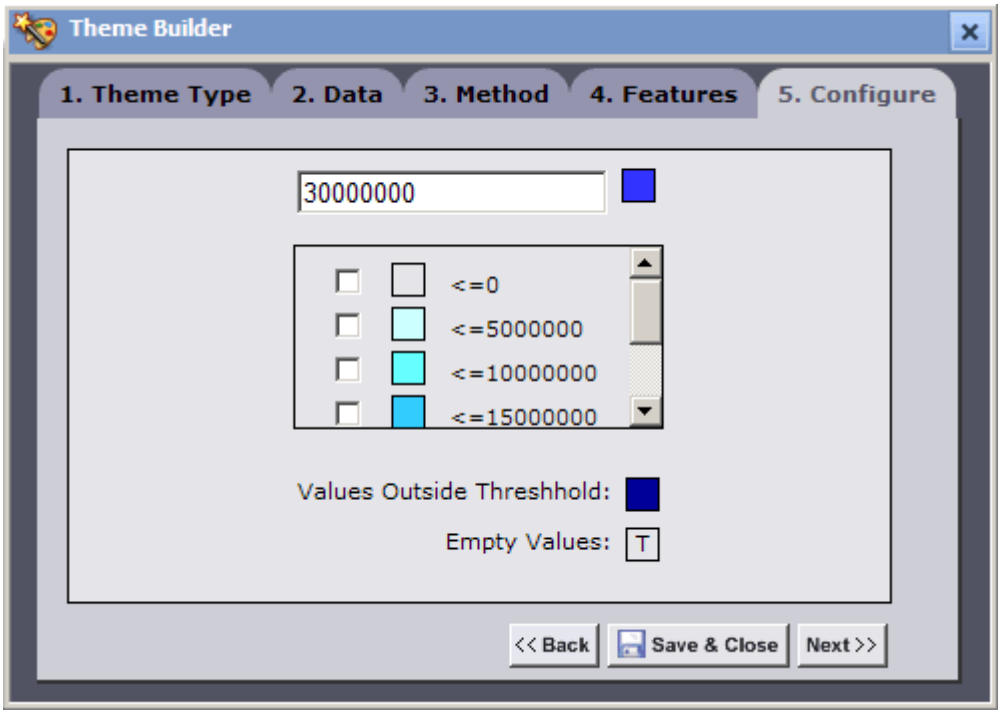


Figure 94. Theme Builder Wizard: Configure Tab (Numeric-Manual-Colors).

14. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Relationship or configuration screen.

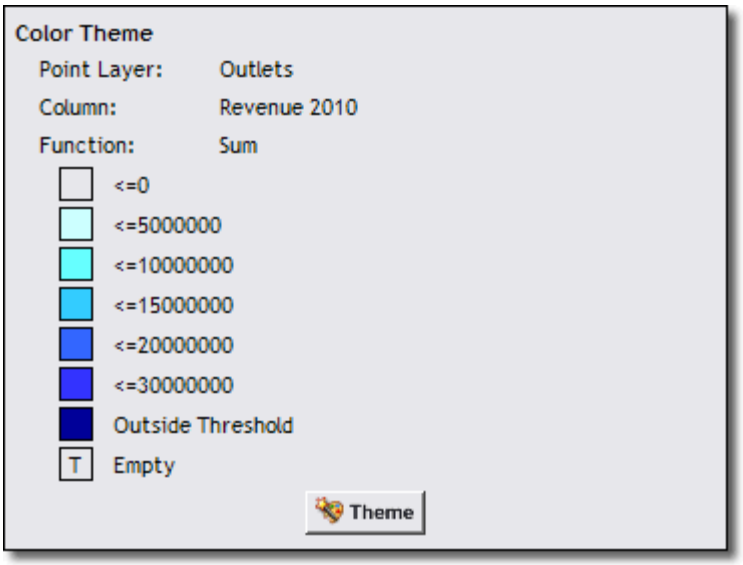


Figure 95. Color Themes Section (Numeric-Manual-Colors).

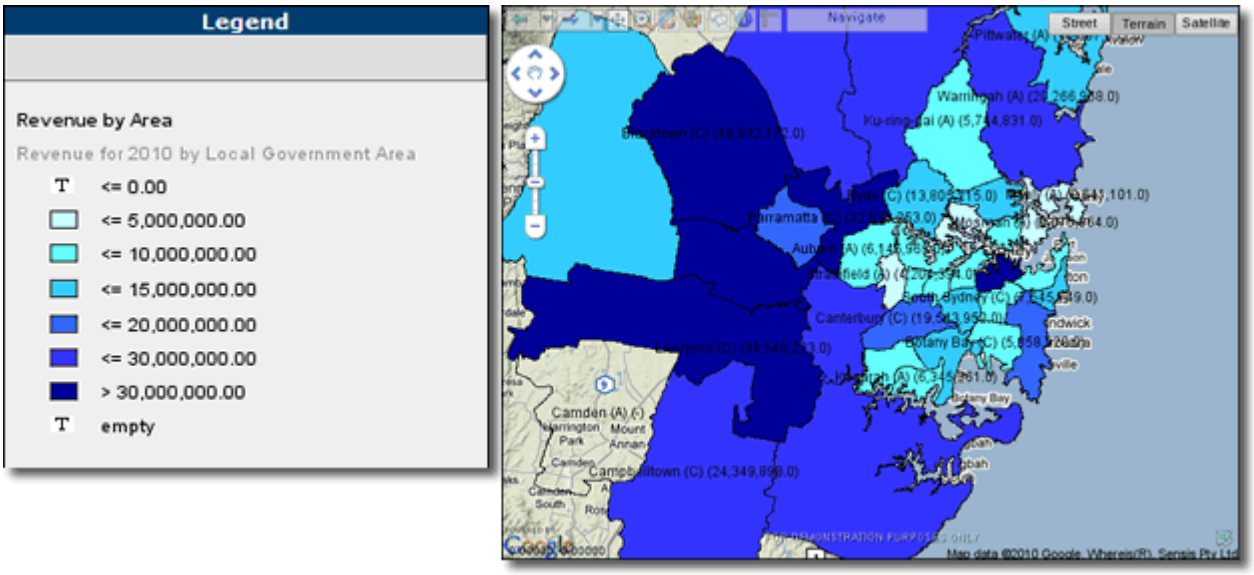


Figure 96. Region Relationship Layer Map View and Legend showing Manual Color Theme.

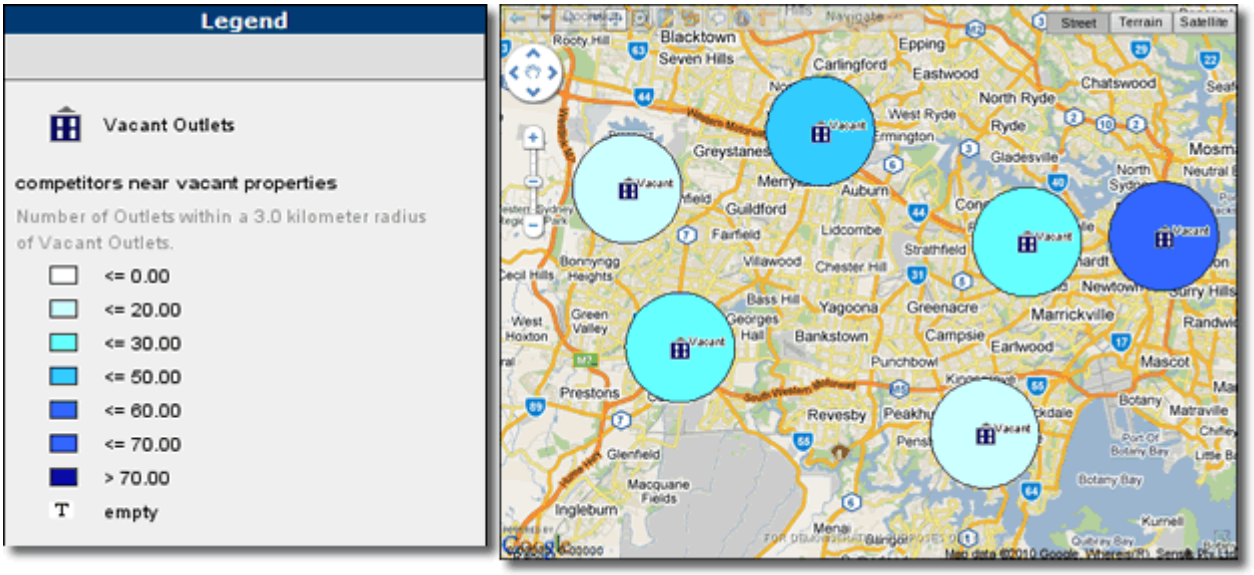


Figure 97. Radius Relationship Layer Map View and Legend showing Manual Color Theme.

SELECTING HATCHES

1. Click the **Hatches** radio button.

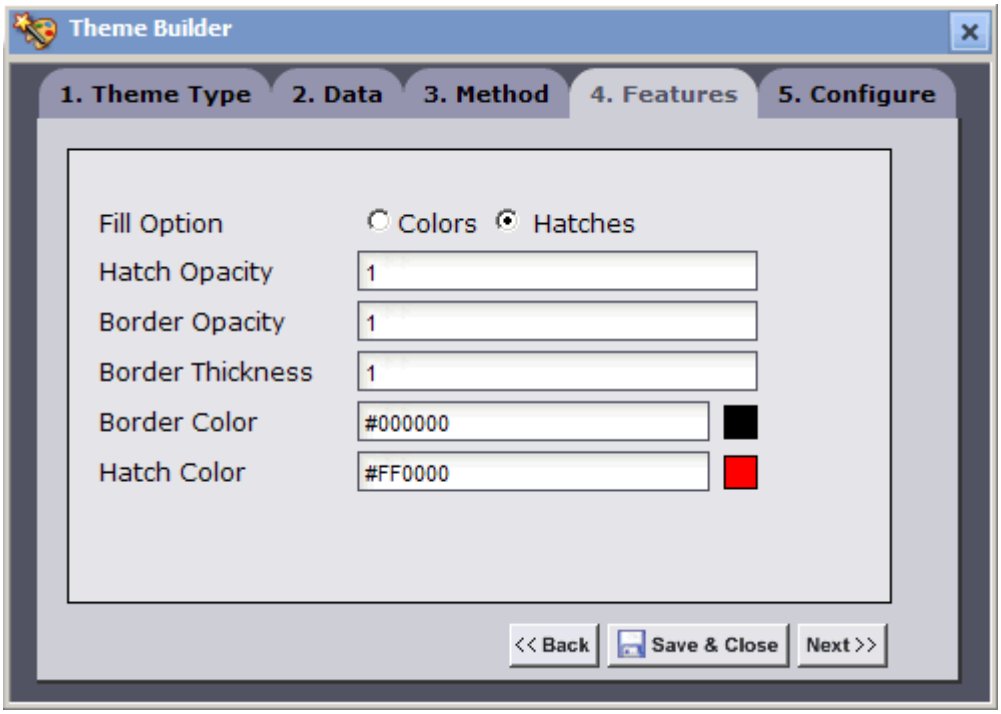


Figure 98. Theme Builder Wizard: Features Tab (Numeric-Manual-Hatches).

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).
6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
8. Enter a threshold value in the top text box.
9. Click the rectangle next to the text box.
10. Select a hatch from the picker that you want to associate with the threshold value.

    The selected threshold value and associated hatch will appear in the preview window list.
11. Configure all other threshold conditions that you wish to associate with a hatch.

12. Click the **Values Outside Threshold** rectangle, then select a hatch from the picker to represent any other values that have not been assigned a specific hatch.

13. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any region or circle that does not contain any values.

14. To delete values assigned to a specific color, in the Preview window lit, click the check box next to the value and click Remove Selected.

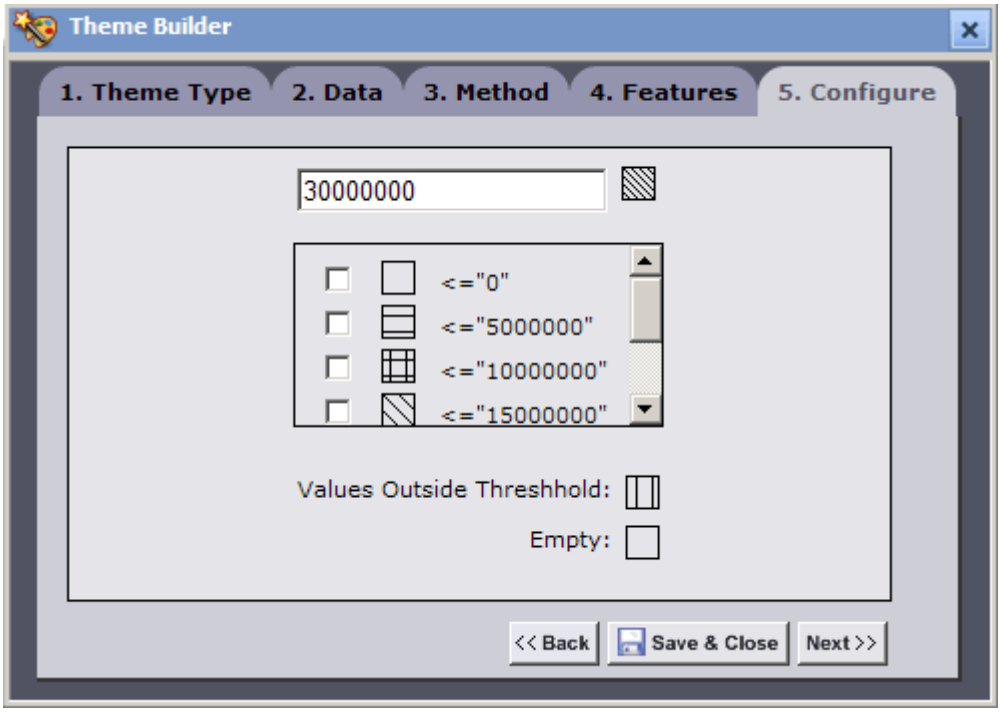


Figure 99. Theme Builder Wizard: Configure Tab (Numeric-Manual-Hatches).

15. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Relationship Layer configuration screen.

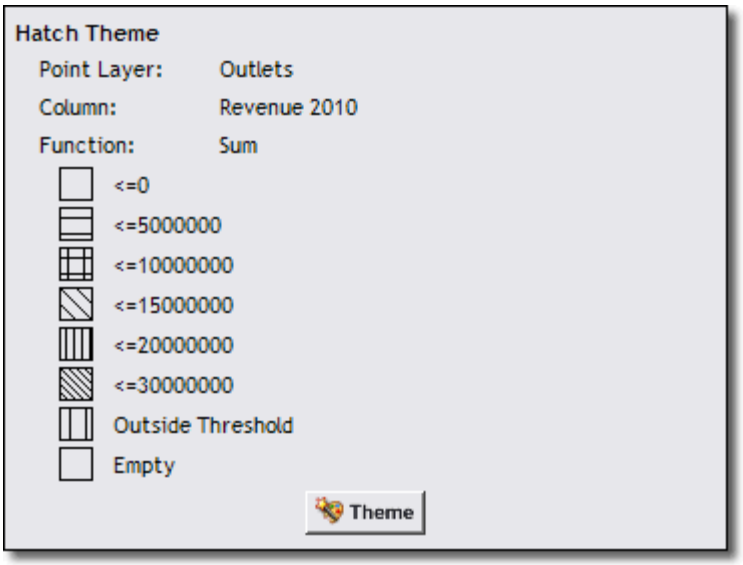


Figure 100. Hatch Theme Section (Numeric-Manual-Hatch).

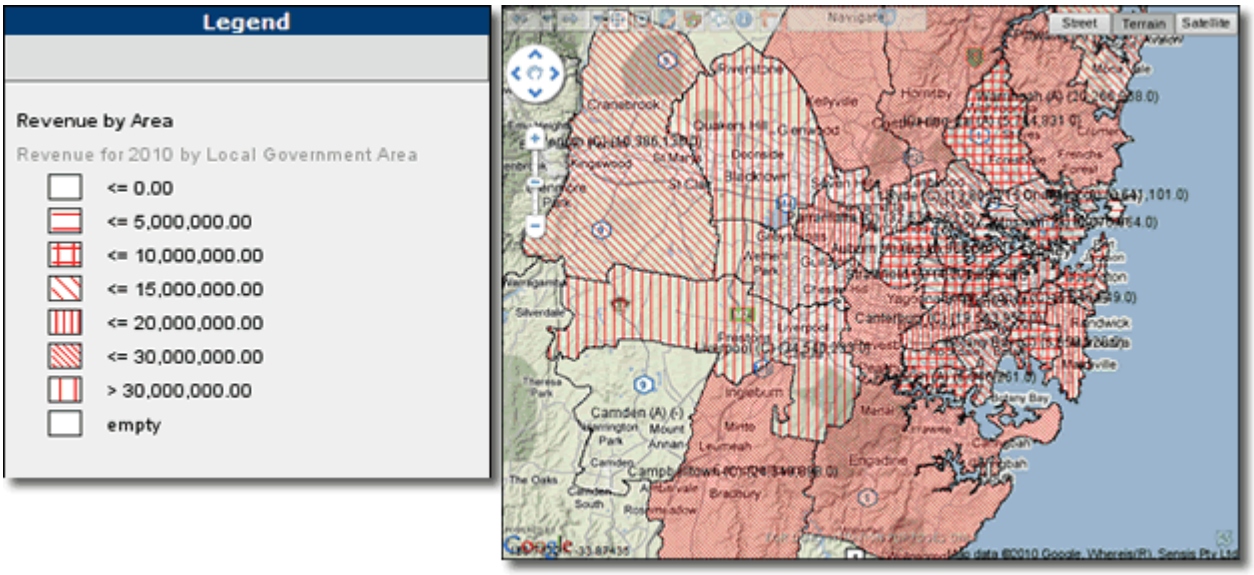


Figure 101. Region Relationship Layer Map View and Legend showing manual Hatch.

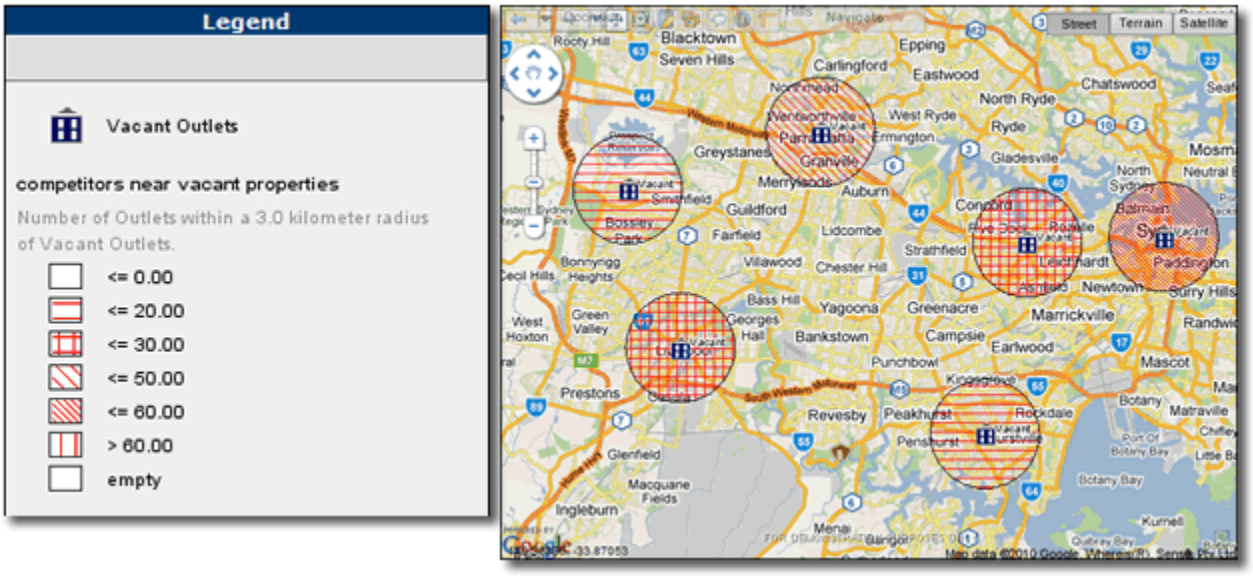


Figure 102. Radius Relationship Layer Map View and Legend showing Manual Hatch Theme.

UNSHADED AND TRANSPARENT COLORS

For further information on using the Transparent and Unshaded color options see Appendix C: Using the Unshaded and Transparent Color Options on page 141.

STRING AGGREGATION

Map Intelligence allows you to perform a function on string values from a specified fact column. String aggregations require you to specify a color/hatch condition for a specific value instead of a threshold. The string functions available include:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

Creating a themes based on a String Aggregation

1. Click the **Theme** button

, the **Theme Builder** wizard will open, displaying the **Theme Type** tab.

2. From the **Point Layer** drop down list, select the Point Layer containing the points that you want to geographically relate to the reference layer.

   When related to a built-in region layer the points will be grouped according the which regions they are contained in. When related to another Point Layer, the points will be grouped according to which points in the reference layer they fall within the given radius of.

3. From the **Column** drop down list, select the Column to use to color the regions. The data for this column will be extracted from the points and aggregated according to the geographical group of the points.

4. Select the **String** radio button.

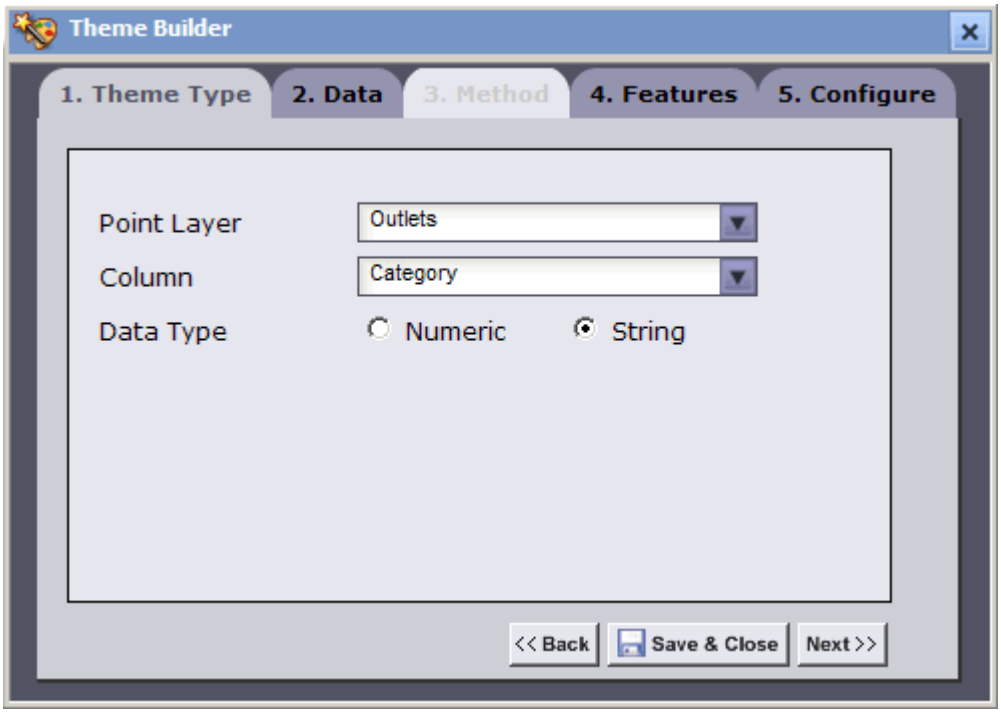


Figure 103. Theme Builder Wizard: Theme Type Tab (String).

5. Click the **Data** tab or the **Next** button, the wizard will move to the **Data** tab.

6. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: Most Common, Uniform and Majority.

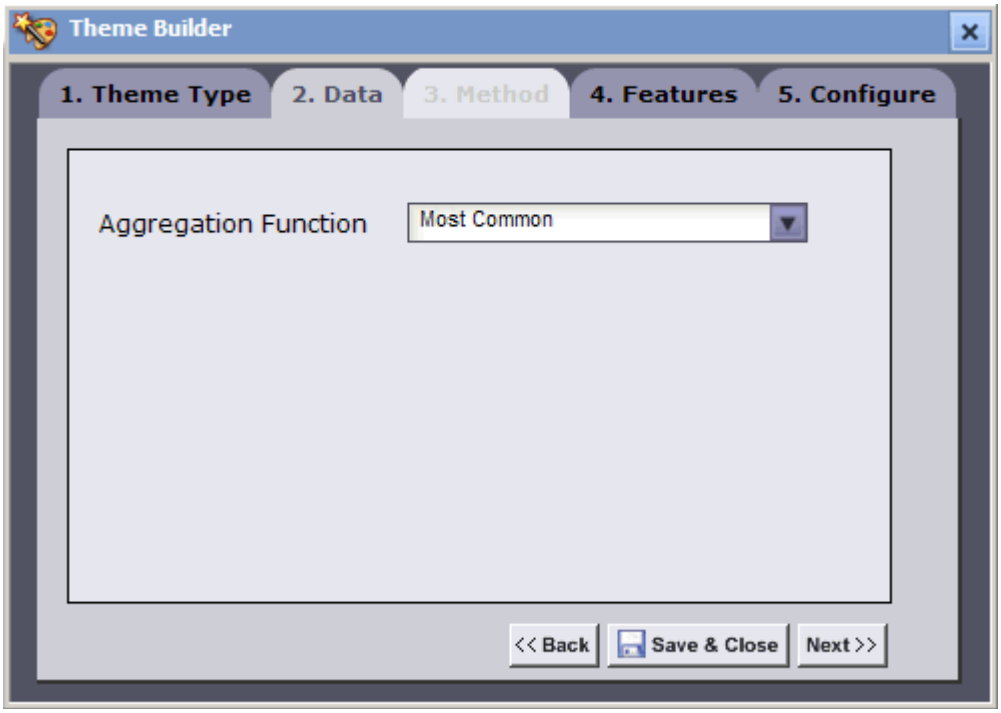


Figure 104. Theme Builder Wizard: Data Tab (String) with 'Most Common' selected.

7. Click the **Features** tab or the **Next** button, the wizard will move to the **Features** tab.

   There are two options for selecting the **Fill Option**:

   - **Colors:** Allows you to specify a particular color.
   - **Hatches**: Allows you to specify a particular hatch.

SELECTING COLORS

1. Click the **Colors** radio button.

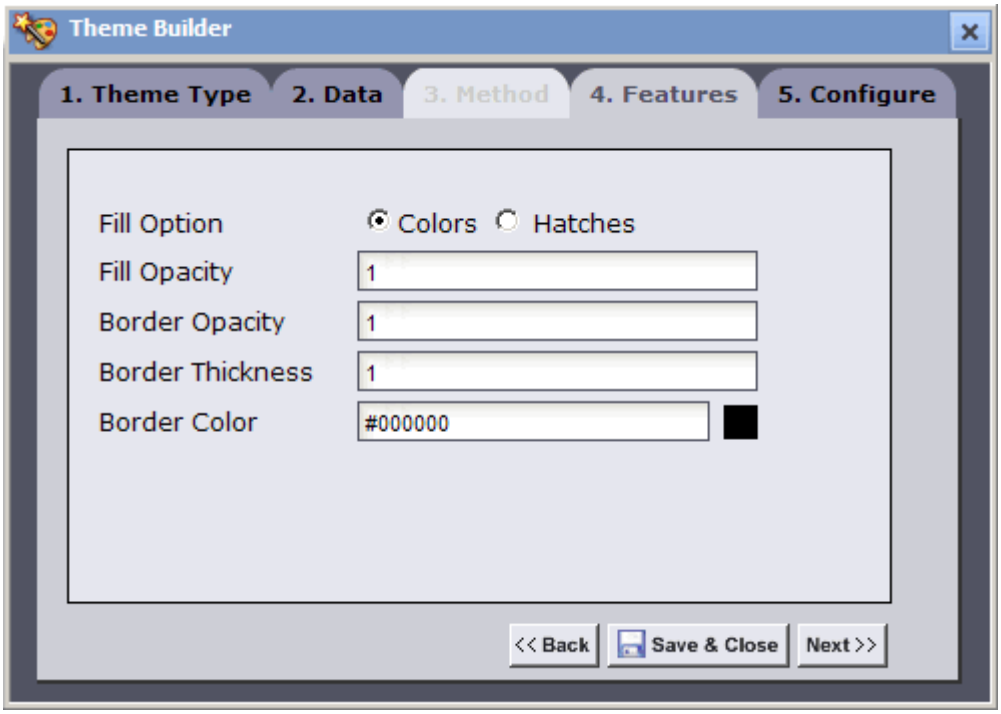


Figure 105. Theme Builder Wizard: Features Tab (String – Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

   Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

   You can shade a region by applying a color to a built-in map layer or circle around a point.

7. The top drop-down list will display all available values from the specified fact column. Select a value from the drop-down list .

   Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take sometime to process.

8. Click the rectangle next to the top drop-down list.

9. Select a color from the color picker that you want to associate with the selected value.

   The selected value and associated color will appear in the preview window list.

   Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

10. Configure any other values that you wish to associate with a color.

    Note Any values not assigned a specific color will be colored according to the color assigned to **Other Values** (see below).

11. Click the **Empty Values** rectangle and select a color from the color picker to represent any region or circle that does not contain any values.

12. Click the **Conflict Values** rectangle and select a color from the color picker to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Other Values** rectangle and select a color from the color picker to represent any values that have not been assigned with a specific color.

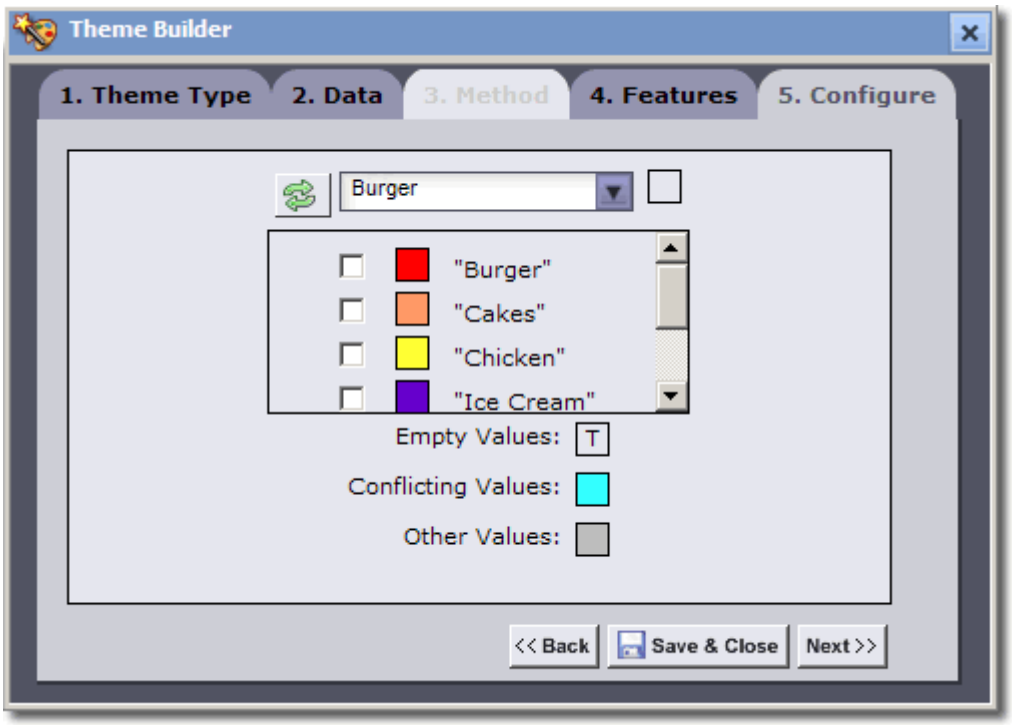


Figure 106. Theme Builder Wizard: Configure Tab (String – Colors).

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

15. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Relationship Layer configuration screen.

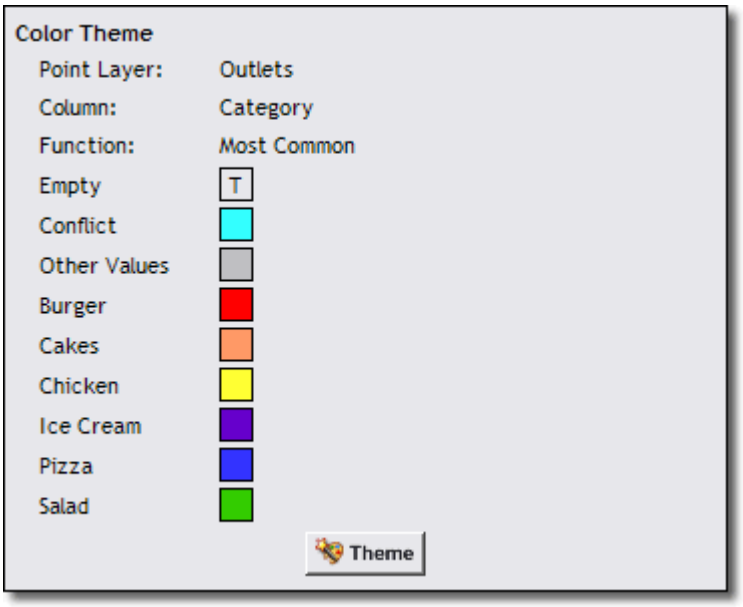


Figure 107. Color Theme (String – Colors).

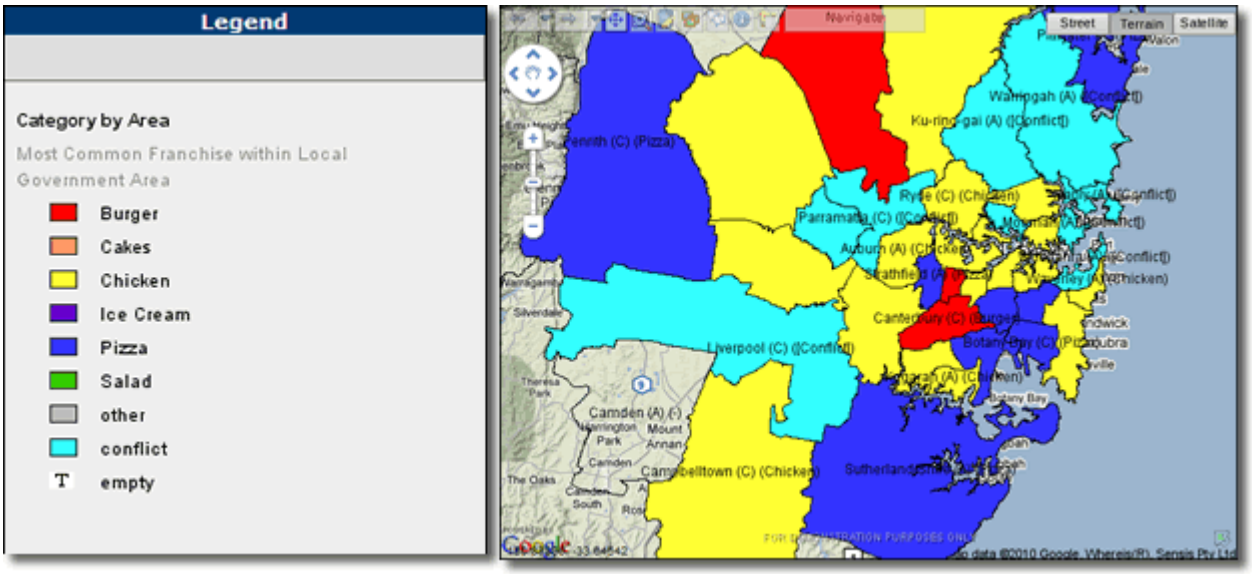


Figure 108. Region Relationship Layer Map View and Legend showing Color Theme (String – Colors).

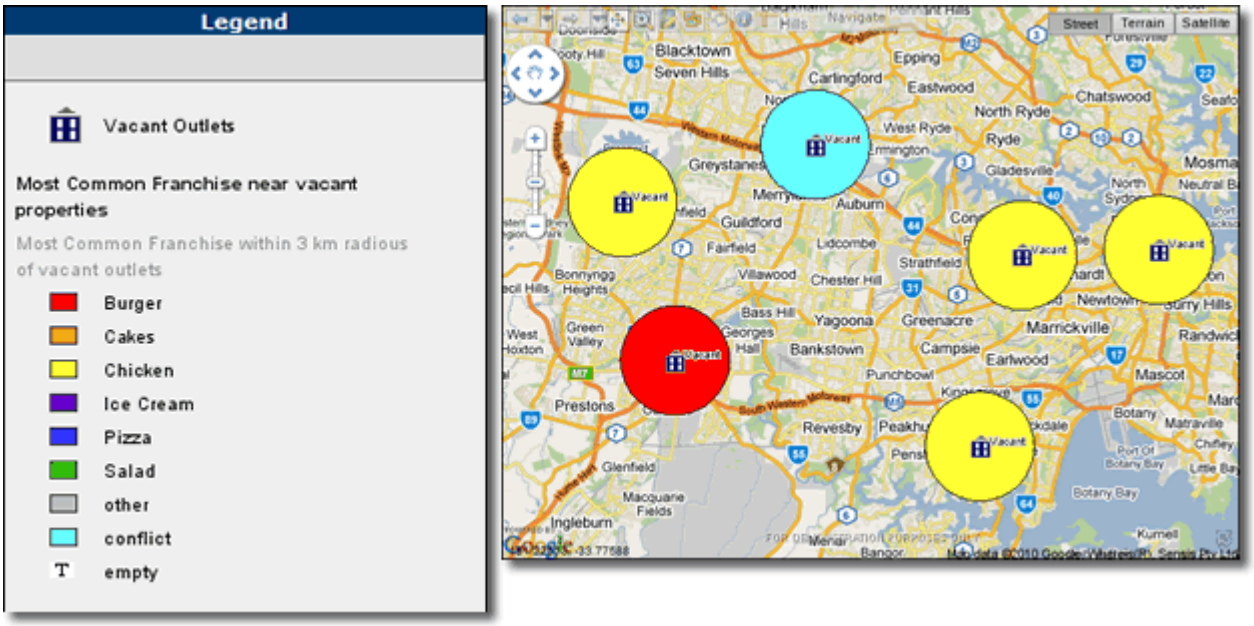


Figure 109. Radius Relationship Layer Map View and Legend showing Color Theme (String – Colors).

SELECTING HATCHES

1. Click the **Hatches** radio button.

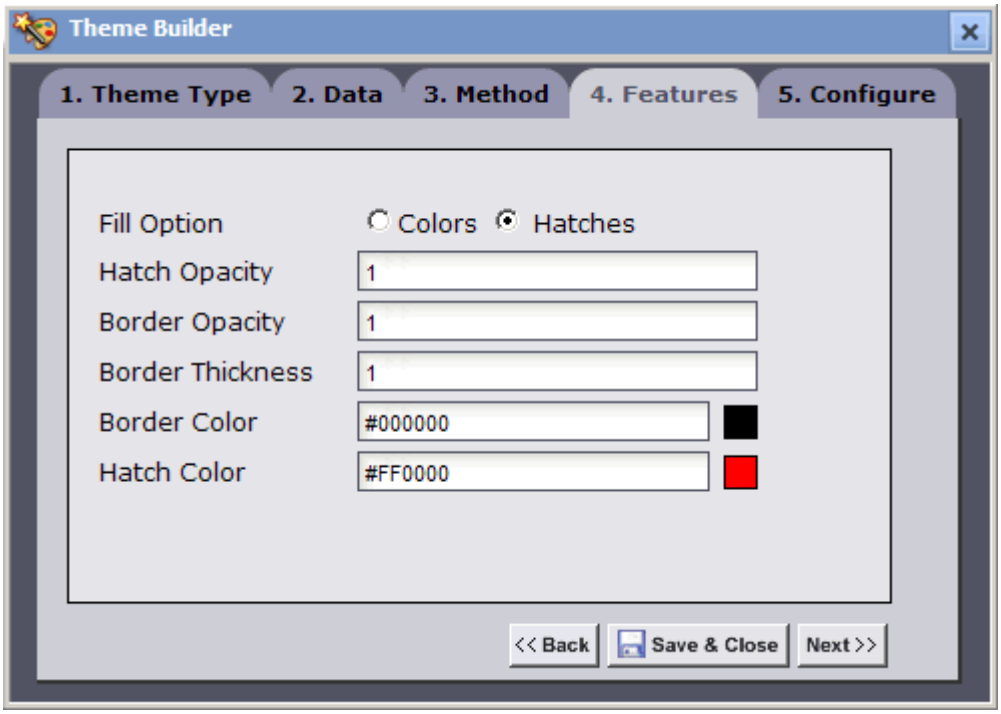


Figure 110. Theme Builder Wizard: Features Tab (String – Hatches).

Features Rendering Attributes

1. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.

2. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

3. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

4. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

5. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

   Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

   You can shade a region by applying a hatch to a built-in map layer or circle around a point.

7. The top drop-down list will display all available values from the specified fact column. Select a value from the drop-down list.

   Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take sometime to process.

8. Click the rectangle next to the top drop-down list.

9. Select a hatch from the picker that you want to associate with the selected value.

   The selected value and associated hatch will appear in the preview window list.

10. Configure any other values that you wish to associate with a hatch.

    Note Any values not assigned a specific hatch will be hatched according to the hatch assigned to **Other Values** (see below).

11. Click the **Empty Values** rectangle and select a hatch from the picker to represent any region or circle that does not contain any values.

12. Click the **Conflict Values** rectangle and select a hatch from the picker to represent any region or circle that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

13. Click the **Other Values** rectangle and select a hatch from the picker to represent any values that have not been assigned with a specific hatch.

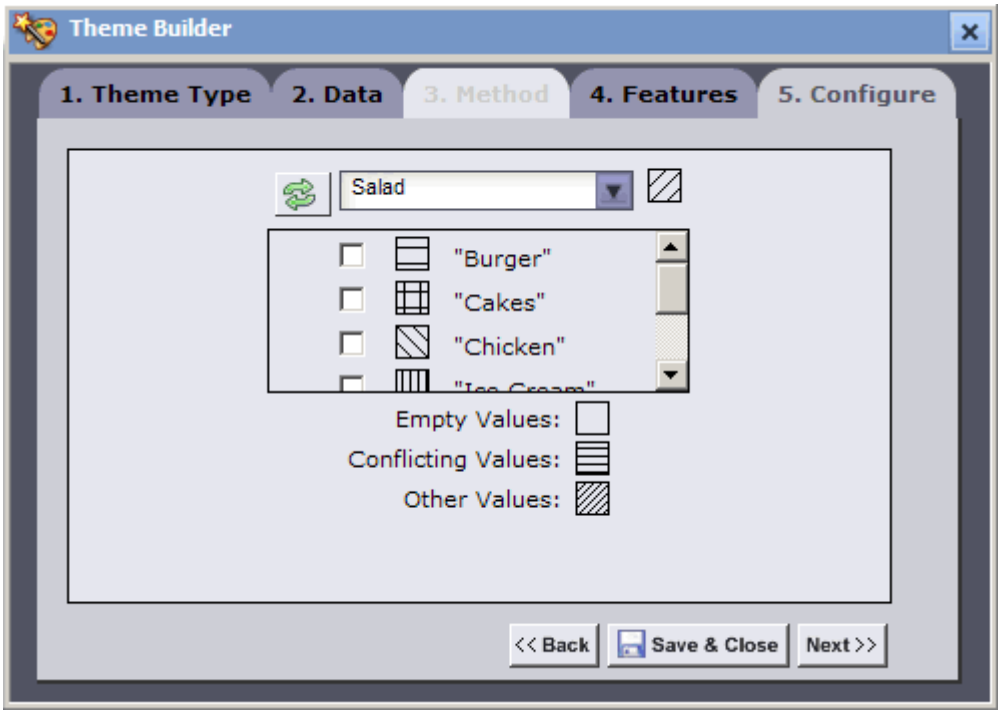


Figure 111. Theme Builder Wizard: Configure Tab (String – Hatch).

14. To delete values assigned to a specific hatch, in the Preview window list, click the check box next to the value and click **Remove Selected**.

15. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Relationship configuration screen.

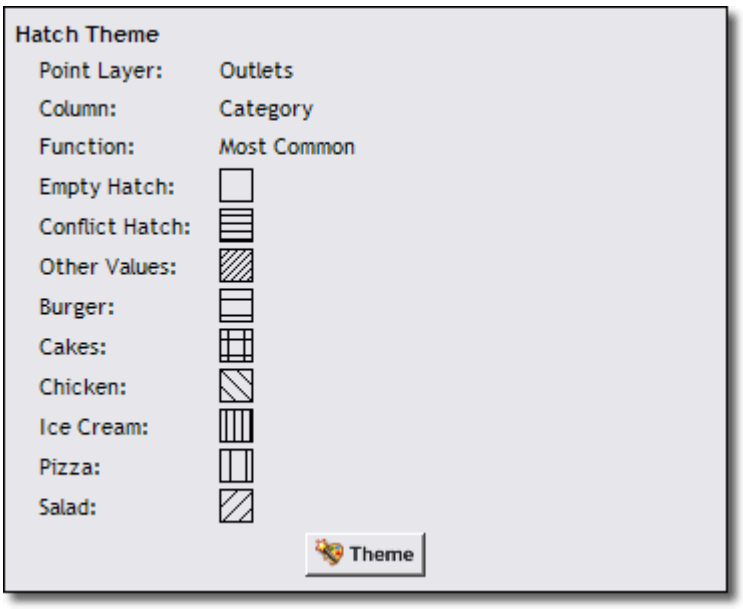


Figure 112. Hatch Theme (String – Hatches).

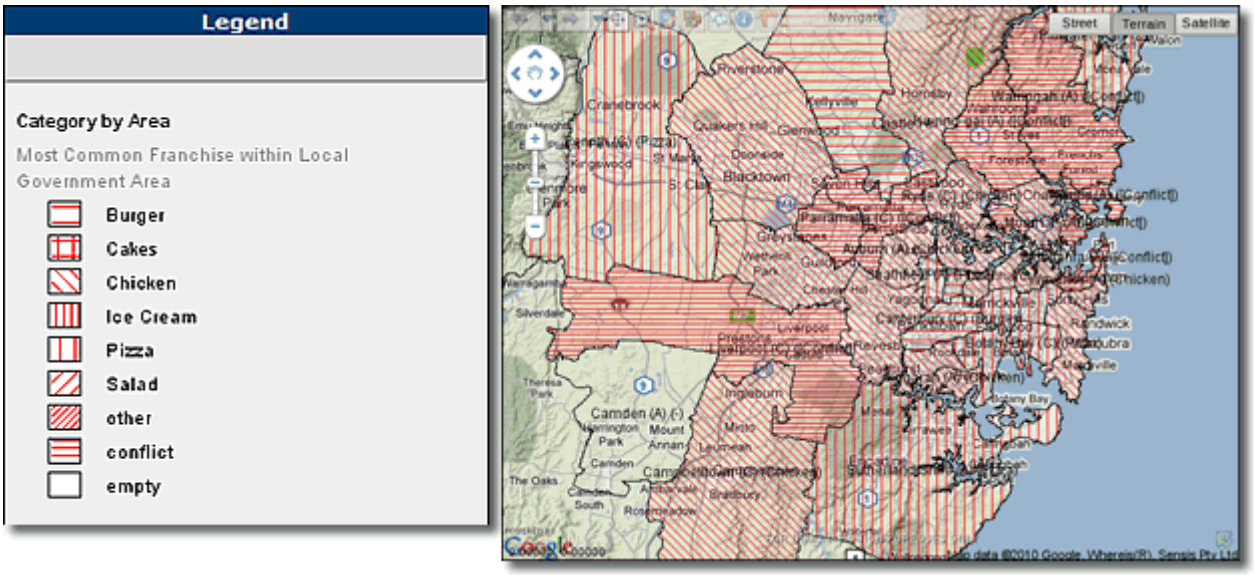


Figure 113. Region Relationship Layer Map View and Legend showing Hatch Theme (String – Hatch).

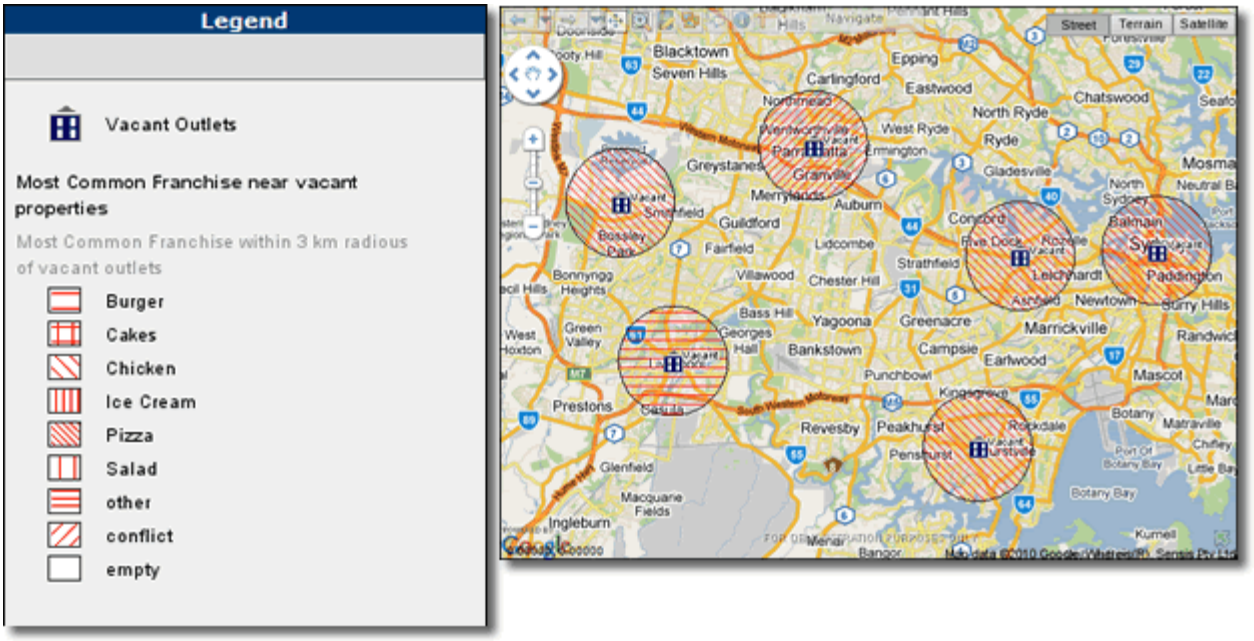


Figure 114. Radius Relationship Layer Map View and Legend showing Hatch Theme (String – Hatch).

UNSHADED AND TRANSPARENT COLORS

For further information on using the Transparent and Unshaded color options see Appendix C: Using the Unshaded and Transparent Color Options on page 141.

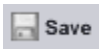
TO TEST YOUR SETTINGS

To test the Relationship Layer configuration

1. From the **Main Menu**, click the **Test** button . A Browser will open displaying your layer configuration. The Layer will also be listed in the **Layer Directory** to the right of the screen.

SAVING THE LAYER

To save the Relationship Layer configuration

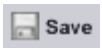
1. From the **Main Menu**, click **Save** button  to save your settings.
2. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The Layer will be saved and listed in the **Layer Directory** to the right of the screen.

   The save button will save **all** changes made to **all** configuration screens.

EDITING A LAYER

To edit a Relationship Layer configuration

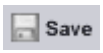
1. From the **Layer Directory**, click on the plus icon next to **Relationship Layers.** The Relationship Layer section will expand.
2. Click on the **Relationship Layer** you want to edit, the layer configuration screen will open for editing.
3. Save your changes by clicking the click **Save** button  on the Main Menu.
4. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

COPYING A LAYER

To copy a Relationship Layer

1. From the **Layer Directory**, click on the plus icon next to **Relationship Layers**. The Point Layer section will expand.
2. Click on the layer you want to copy, the layer configuration screen will open.
3. From the **Main Menu**, click the **Copy** button . A copy of the layer will appear.
4. In the **Layer Name** field, enter a new name for the layer.

5. Save your changes by clicking the **Save** button  on the top menu.

6. A message box will appear stating your “Configuration saved successfully”, click the **OK** button.

   The new layer will appear in the Layer Directory.

   The save button will save **all** changes made to **all** configuration screens.

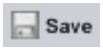
DELETING A LAYER

To delete a Relationship Layer

1. From the **Layer Directory**, click on the plus icon next to **Relationship Layers.** The Relationship Layer section will expand.

2. Click on the **Relationship Layer** you want to delete, the layer configuration screen will open.

3. From the **Main Menu**, click the **Delete** button .

4. Save your changes by clicking the **Save** button  on the Main menu.

5. A message box will appear stating your “Configuration saved successfully”, click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

NOTE ON DATA FORMAT

Map Intelligence, by default, will place commas in numbers greater than 999. You can change the format by specifying the column format in the universe. This only applies to columns with numeric values.

CONFIGURE AREA GROUP LAYERS

Note For a description of Area Group Layers, see Layer Types - Area Group Layer on page 10.

To open the Area Group Layer configuration screen

1. Click on the **Area Group Layers** tab

, the Area Group Layer configuration screen will appear.

2. Click the **New Layer** button

. This clears the fields and allows you to set the properties for a new layer.

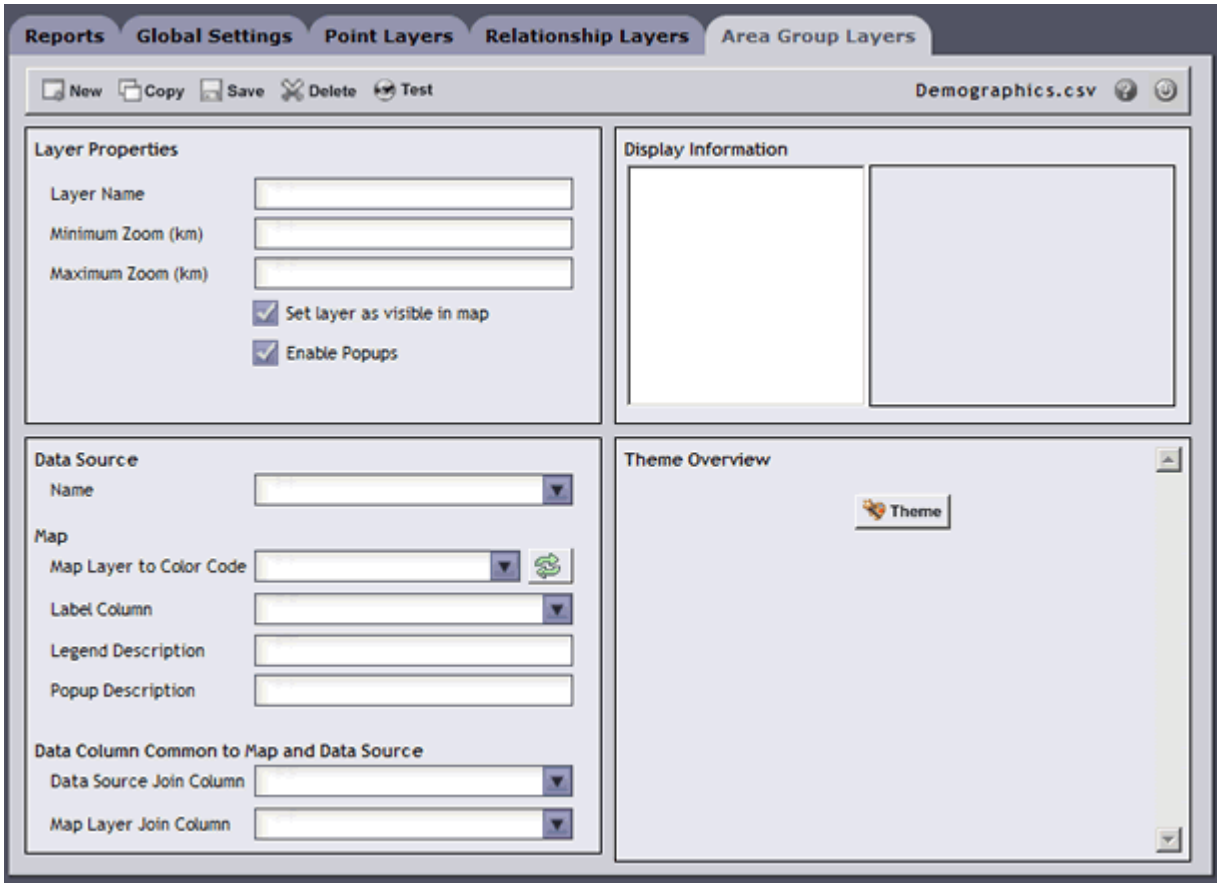


Figure 115. Area Group Layer configuration screen.

LAYER PROPERTIES SECTION

To configure the Layer Properties section

1. In the **Layer Name** field, enter a title for the layer.

Note Layer names are trimmed (spacing characters at the beginning or end are removed) and cannot contain double or single quotes. For Map Intelligence Servers 3.1 or below, only letters, numbers and spaces may be used.

2. You can specify a range in which the layer will be visible on the map by entering a **Minimum Zoom** and **Maximum Zoom** value. The layer will only be visible if the current map width is within the specified minimum and maximum value.

3. Select the **Set Layer as Visible in Map** checkbox if you wish this particular layer to be visible when you first access the Mapping Viewer.

4. Select the **Enable Popups** checkbox if you wish information popups to be enabled for the layer when you first access the Mapping Viewer.

Note Information Popup boxes provide further information about a region when you move your mouse over the region on the map (Display Information Section below).

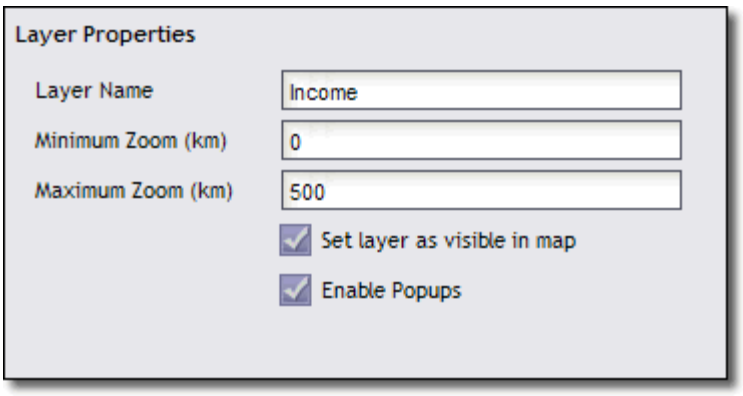


Figure 116. Layer Properties section.

DATA SOURCE SECTION

To configure the Data Source section

The **Data Source** section allows you to configure the necessary map and data source settings for the layer.

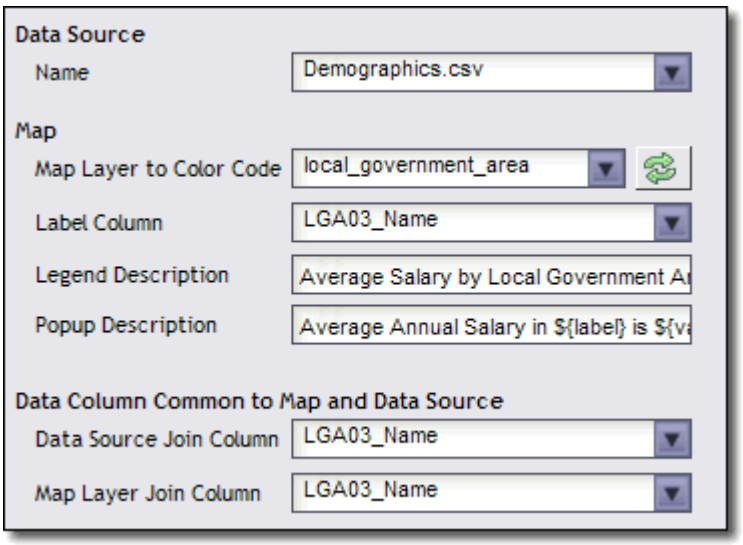


Figure 117. Data Source section.

1. From the **Name** drop-down list, select the data source to be used for this layer.

Name is the concatenated Analysis' location and name.

MAP

The Map part of the Data Source section allows you to configure the necessary map settings for the layer.

1. From the **Map Layer to Color Code** drop-down list, select the built-in map layer that you want to shade or apply a color to.

- To Refresh the Map Layer to Color Code drop-down list, click the Refresh button .
- Only layers containing regions can be used as reference layers.
- Built-in layers are arranged in a particular order on the map. When selecting a built-in layer to shade, all map layers that sit under the selected layer will be covered by the selected color or hatch.

2. From the **Label Column** drop-down list, select the column in the map layer that contains the values to be used as labels for the regions.

- Map Intelligence IGP users: Labels will not be visible if the server setting *Show Region Built-in Label* has been set to *No*. Refer to the *Settings* section of the *Map Intelligence Server Tools and Administration Guide*.

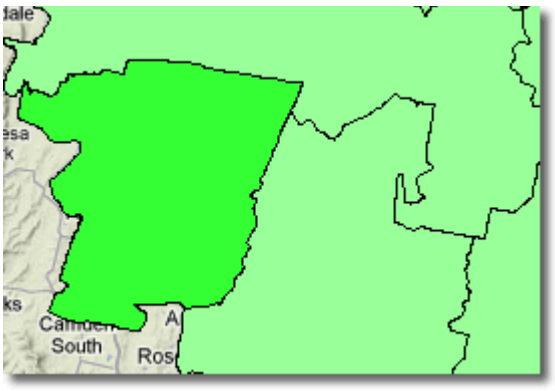


Figure 118. When no Label column has been selected, no labels appear on the map.

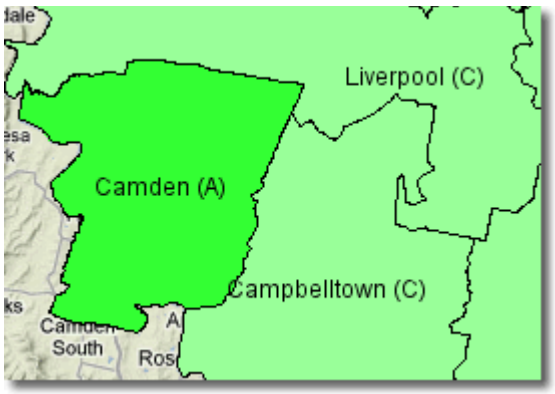


Figure 119. In this example the *half degree* column label was selected, now each half degree grid square on the map displays its code number label.

3. In the **Legend Description** field, enter a description to use in the legend for this layer. If this field is left blank, a description will be generated by Map Intelligence.

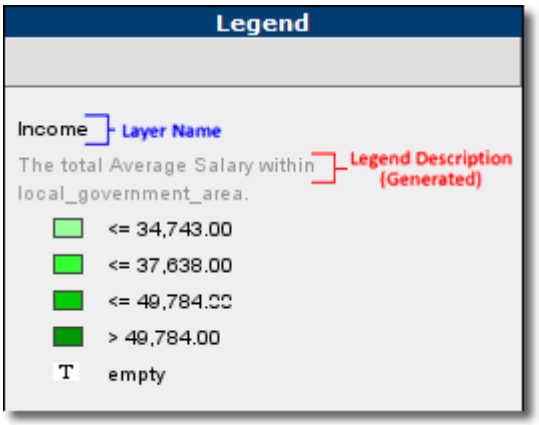


Figure 120. Legend showing a Map Intelligence generated description.

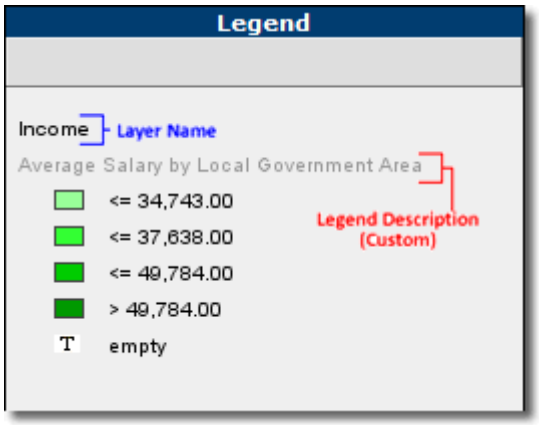


Figure 121. Legend showing a customized description

4. In the **Popup Description** field, enter a description to use for Information Popups for this layer. The Popup Description describes each region of the layer and may contain any of the following parameters:

${label}	Will be replaced with the label for the region.
${value}	${value} will be replaced with the value for the region determined by the theme (see Creating Themes for Area Group Layers on page 95).
${*ColumnName*}	Replace *ColumnName* with the name of a column selected in **Display Information** (see Display Information Section of the Area Group Layer configuration screen). The value of this column will be displayed in the popup description for the region.
Example	${value} items in ${label}

If this field is left blank a description will be generated by Map Intelligence.

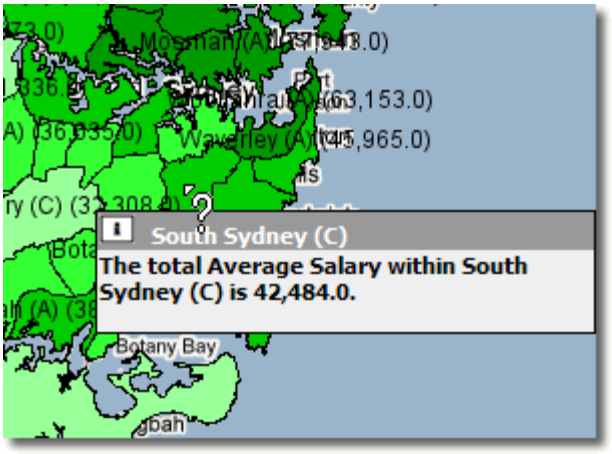


Figure 122. Information popup displaying a Map Intelligence generated Popup description

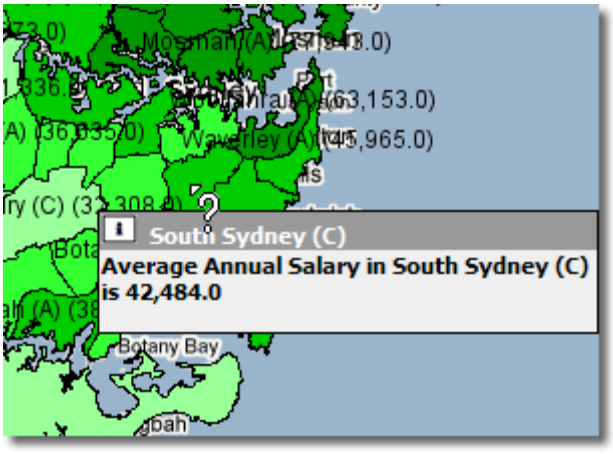


Figure 123. Customized Popup description. In this example the following description was entered into the Popup Description text box.

Average Annual Salary in ${label} is {value}.

DATA COLUMN COMMON TO MAP AND DATA SOURCE

Area Group layers require a join between a column in your data source and a column in the built-in map layer that you want to shade. You need matching values from these two columns for the Area Group layer to work.

1. From the **Data Source Join Column** drop-down list, select the column from your data source that contains values that will match the ones specified in the Map Layer Join Column (below).

2. From the **Map Layer Join Column** drop-down list, select a column from the built in map layer that contains values that match the ones specified in the Data Source Join Column (above).

DISPLAY INFORMATION SECTION

The Display Information section shows a list of data columns, these columns can be specified as display columns to be included as additional information in the Information pop-up box. Each column has an associated aggregation function.

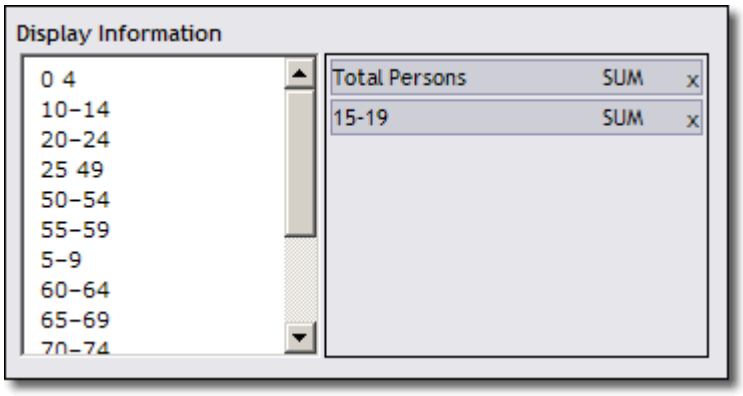


Figure 124. Display Information Section

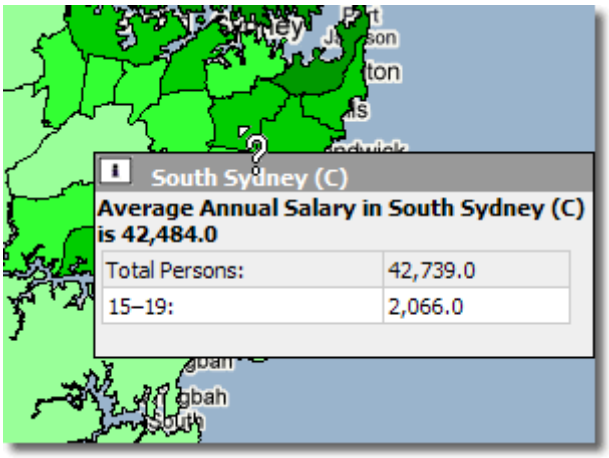
To configure the Display Information section

1. Select a data column from the list. On selection a drop-down list appears displaying a list of aggregation functions.

2. Select an aggregation function. The selected data column will appear in the box on the right.

3. Repeat steps 1 and 2 to add further data columns.

4. To deselect a data column, click the ⊠ next to the selected data column name.



The example shown in Figure 125, shows the result of adding the two additional data columns, showing Total Population for the LGA and the number of people in the LGA for a target age range (15 to 19 year olds).

Figure 125. Example of Information Popup box with additional

data column information.

CREATING THEMES FOR AREA GROUP LAYERS

Creating themes for Area Group Layers require you to specify threshold conditions based on a Numeric or String aggregation using the **Theme Builder** wizard on the Area Group Layer configuration screen.

Note that only one color and one hatch layer can be displayed simultaneously for a particular built-in-layer. If you have multiple layers that use the same built-in layer, you can switch between these using the Theme Select option from the Mapping Viewer (refer to the *Map Intelligence Mapping Viewer User Manual*.

NUMERIC AGGREGATION LAYERS

Map Intelligence allows you to perform a function on values from a specified column. The specified built-in map layer will then be shaded according to the resulting values. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

Creating a themes based on a Numeric Aggregation

1. Click the **Theme** button

, the Theme Builder wizard will open, displaying the **Theme Type** tab.
2. From the **Fact Column** drop-down list, select the column that contains the values to be measured for this layer.
3. Select the **Numeric** radio button.

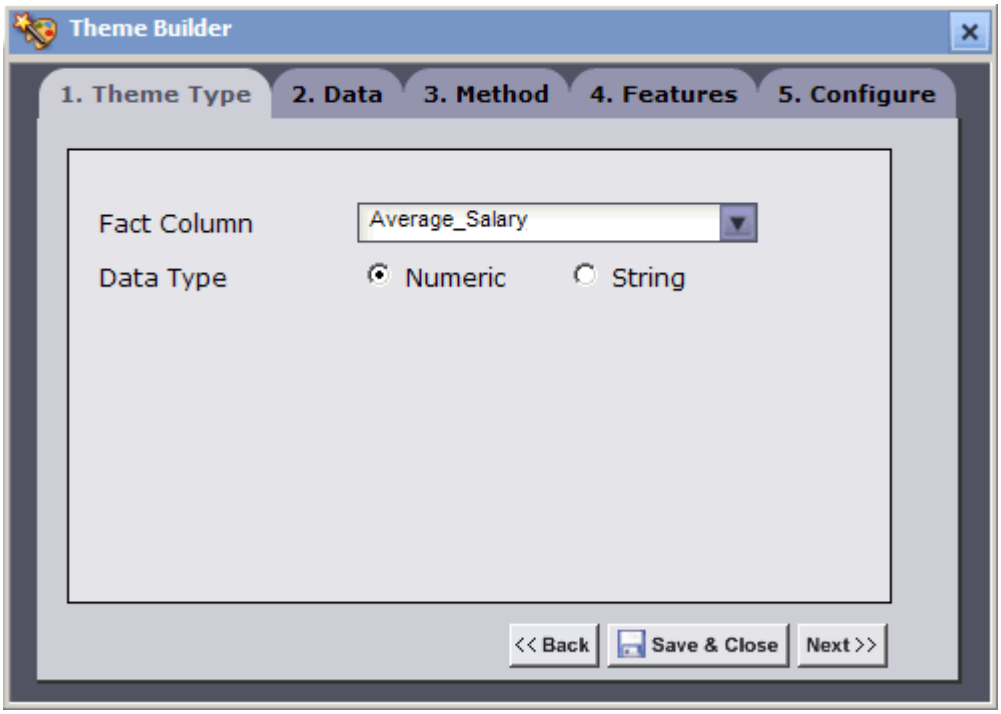


Figure 126. Theme Builder Wizard: Theme Type Tab (Numeric).

4. Click the **Data** tab or the **Next** button, the wizard will move to the **Data** tab.

5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The numeric functions available include: Count, Sum, Min, Max, Mean and Median.

6. For the **Calculation** option, ick either the by **Value** or by **Percentage** radio button.

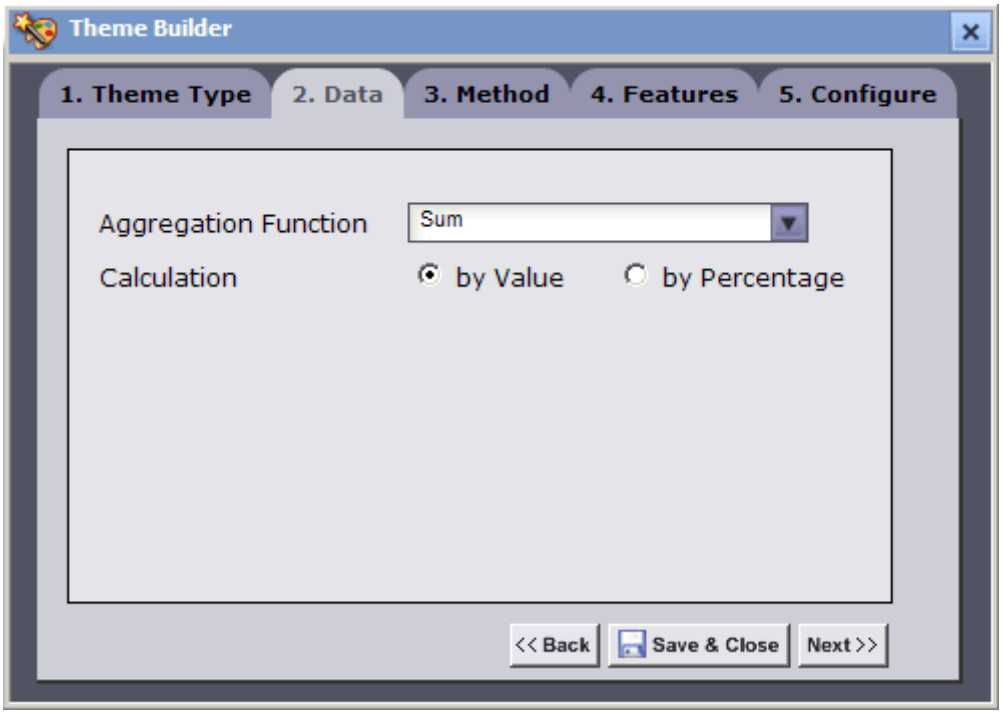


Figure 127. Theme Builder Wizard: Data Tab (Numeric).

7. Click the **Method** tab or the **Next** button, the wizard will move to the Method tab.

   There are two methods for applying themes:

   - Automatic
   - Manual

AUTOMATIC METHOD

1. For **Theme Method**, click the **Automatic** radio button.

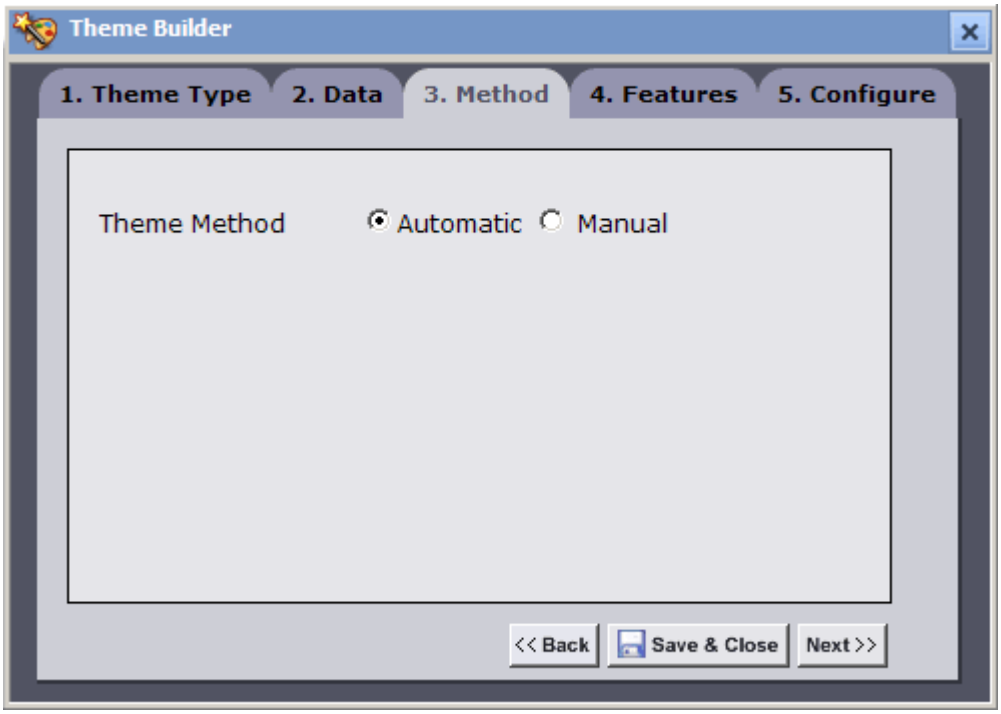


Figure 128. Theme Builder Wizard: Method Tab (Numeric- Automatic).

2. Click the **Features** tab or the **Next** button, the wizard will move to the **Features** tab.

3. From the **Scheme** drop-down list, select a classification scheme.

   You can use a standard classification scheme to group similar values to look for patterns in the data. You can choose from three schemes for grouping data values into classes based on how the data values are distributed.

   - **Equal Interval**: The difference between the high and low values is the same for every class. So, the classification of the data will be based on a set of equal splits. For example, if the lowest value is 0 and the highest value is 10 in the data, and 5 classes are requested, the range of each class will be 0 to 2, 2 to 4, 4 to 6, 6 to 8, 8 to 10.
   - **Quantile**: Each class contains an equal number of features. In this case, the points are sorted in ascending order (for the chosen data field) and each class is filled with (total number of points)/(number of classes) points starting from the lowest value to the highest.
   - **Standard Deviation**: Features are placed in classes based on how much their values vary from the mean. First the mean and standard deviation of the data values are calculated. The class breaks are found by successively adding or subtracting multiples of the standard deviation from the mean.

4. From the **Class Count** drop-down list, select the number of colors to appear in your shading range.

5. If **Equal Interval** was selected for **Scheme**, for **Scale**, click either the **Linear** or **Logarithmic** radio button.

6. If **Standard Deviation** was selected for **Scheme**, for **Multiplier** enter the multiplying factor.

   There are three options for selecting the **Fill Option**:

- **Specific Colors:** Allows you to specify a particular color for each class.
- **Color Range:** Allows you to choose a start and end color.
- **Hatches**. Allows you to specify a particular hatch for each class.

SELECTING SPECIFIC COLORS

1. Click the **Specific Colors** radio button.

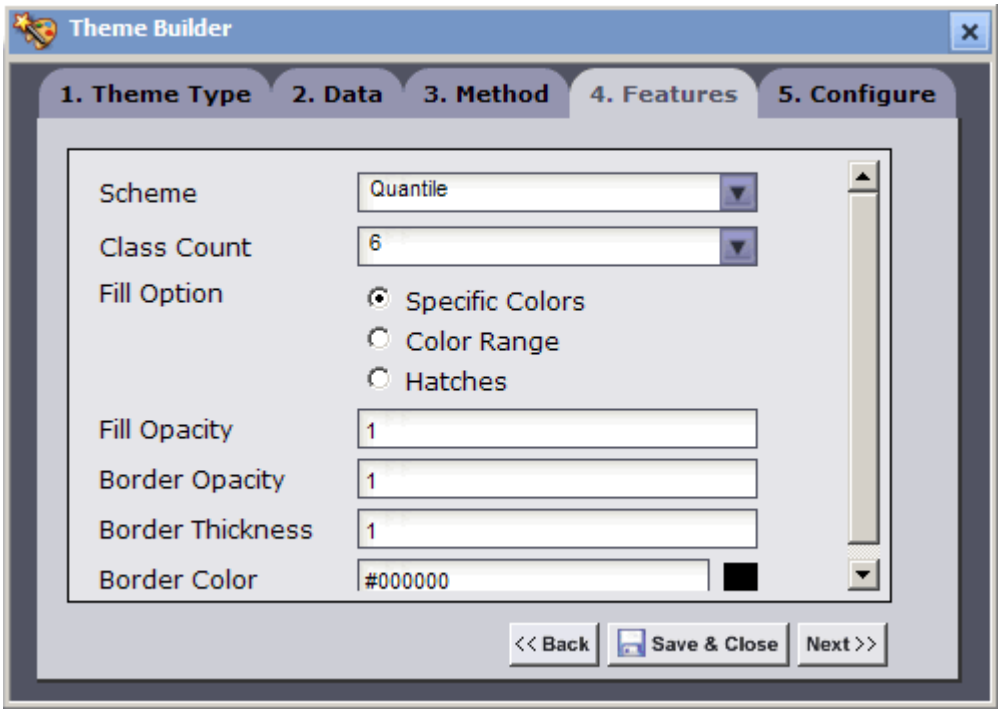


Figure 129. Theme Builder Wizard: Features Tab (Numeric- Automatic – Specific Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
7. Click the **Class 1** colored rectangle.

8. Select a color from the color picker.

9. Repeat Steps the above steps for each class listed.

10. Click the **Empty Color** colored rectangle.

11. Select a color for any region that does not contain any values.

The colored rectangles will change to the new color after each selection.

If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

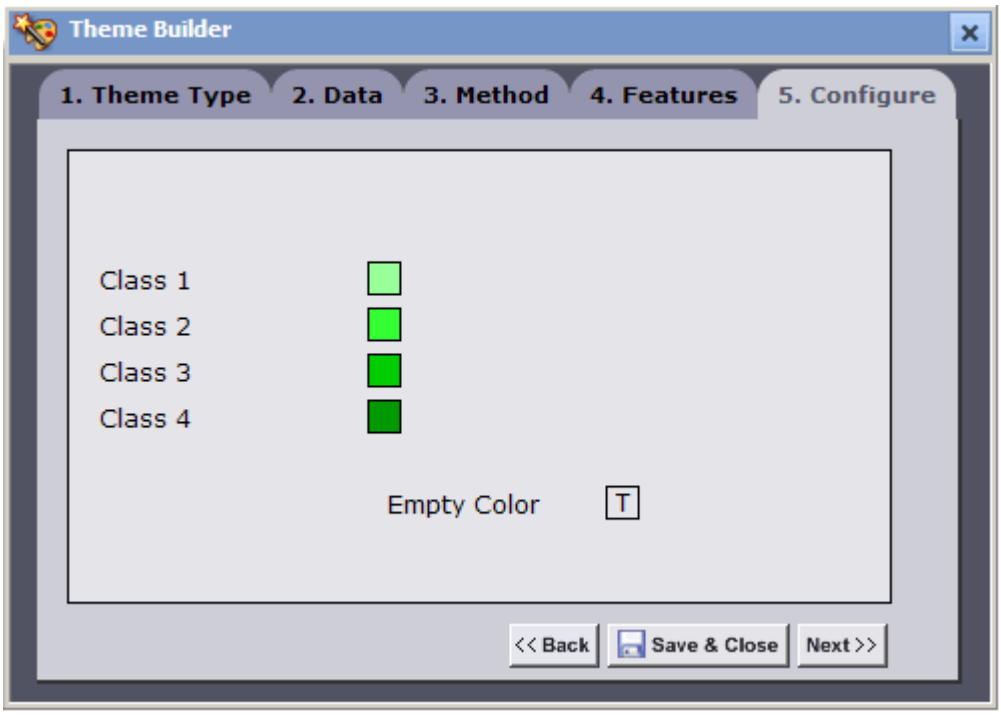


Figure 130 Theme Builder Wizard: Configure Tab (Numeric- Automatic – Specific Colors).

12. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Color Theme** section of the Area Group Layer configuration screen.

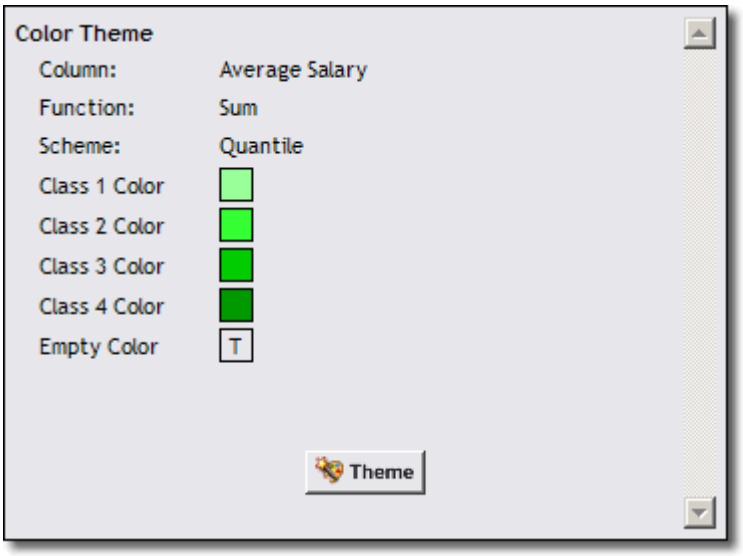


Figure 131. Themes Section showing Specific Color Theme.

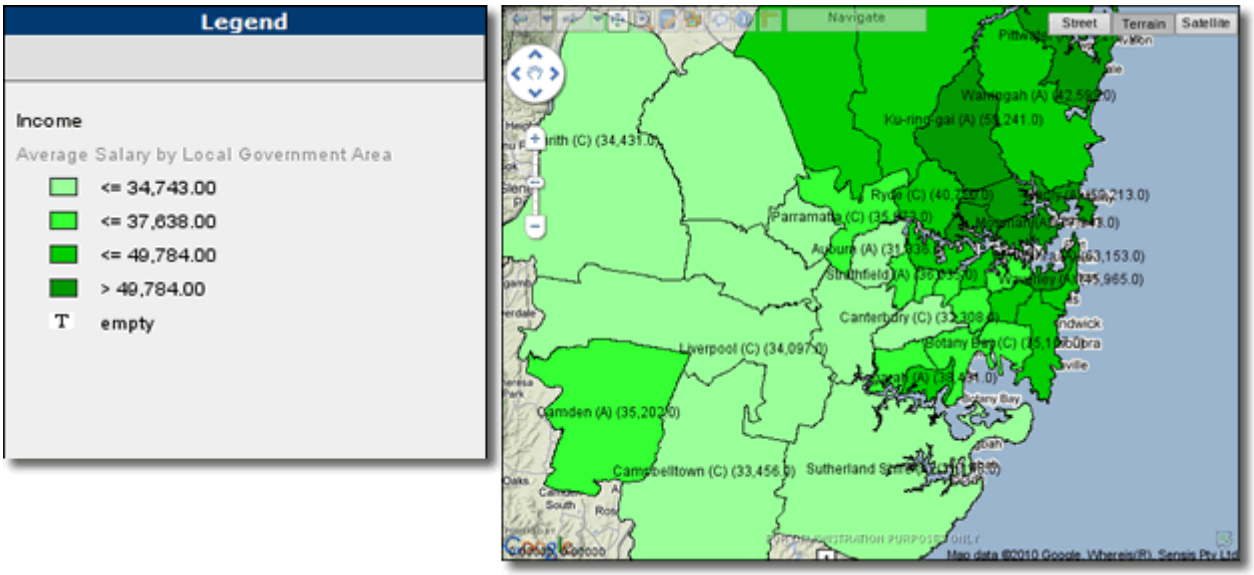


Figure 132. Area Group Layer Map View and Legend showing Specific Color Theme.

SELECTING COLOR RANGE

1. Click the **Color Range** radio button.

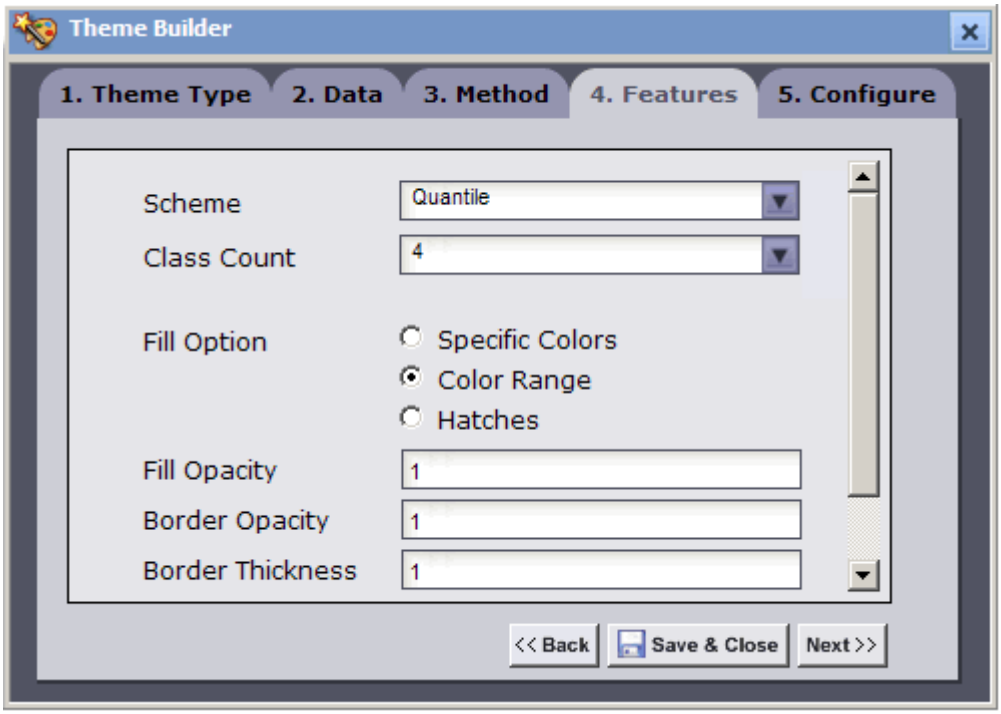


Figure 133. Theme Builder Wizard: Features Tab (Numeric- Automatic – Color Range).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

7. Click the **Start Color** colored rectangle.

8. Select the start color from the color picker and click **OK**.

9. Click the **End Color** colored rectangle.

10. Select the end color from the color window and click **OK**.

11. Click the **Empty Color** colored rectangle.

12. Select a color for any region that does not contain any values and click **OK**.

    Note The colored rectangles will change to the new color chosen after each selection.

    Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

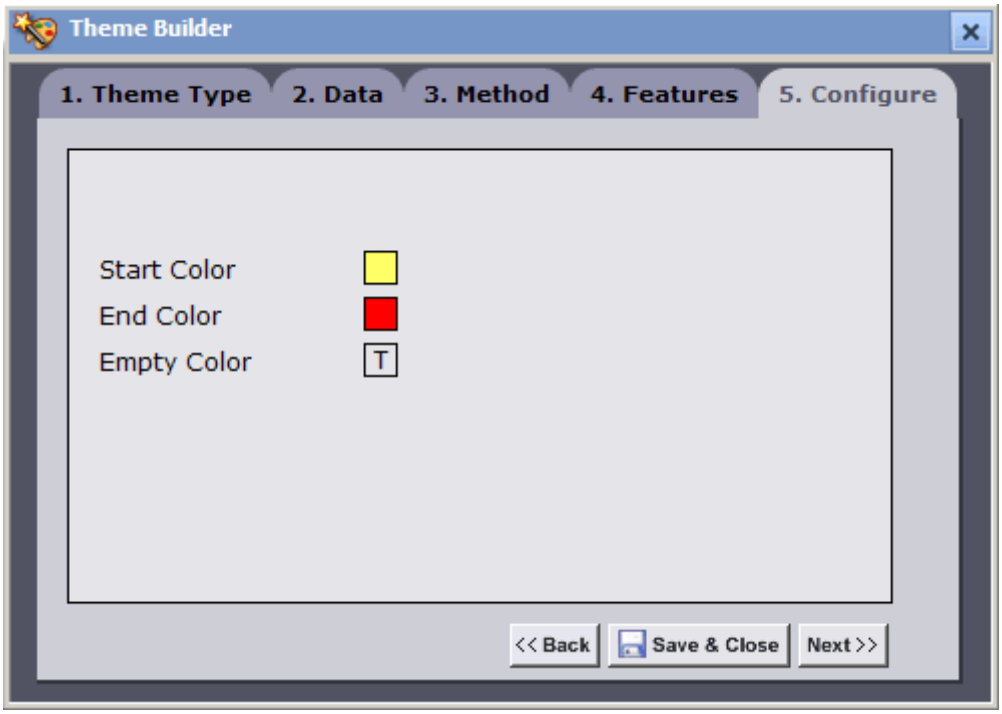


Figure 134. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Color Range).

13. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.

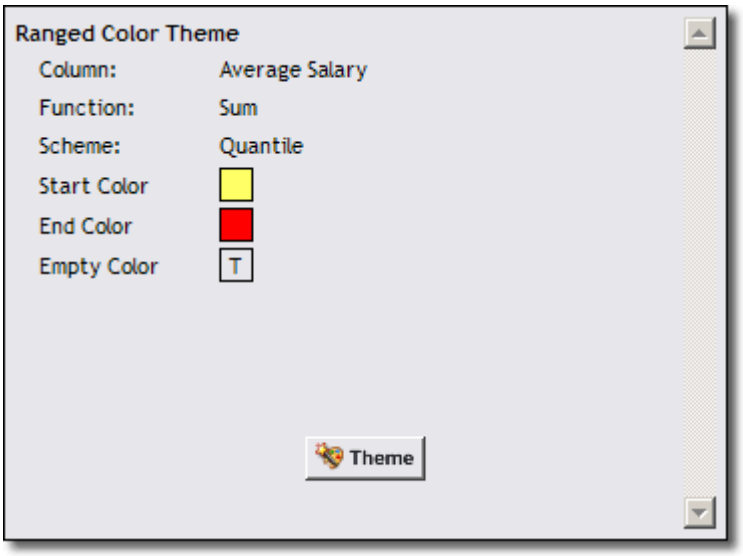


Figure 135. Themes Section showing Ranged Color Theme.

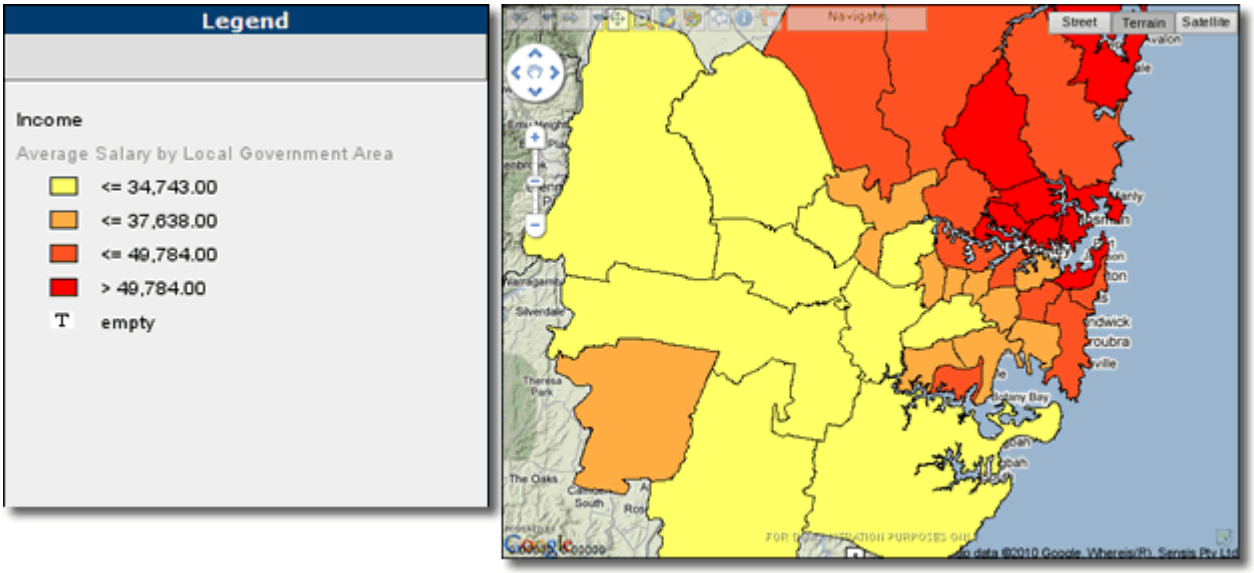


Figure 136. Area Group Layer Map View and Legend showing Ranged Color Theme.

SELECTING HATCHES

1. Click the **Hatches** radio button.

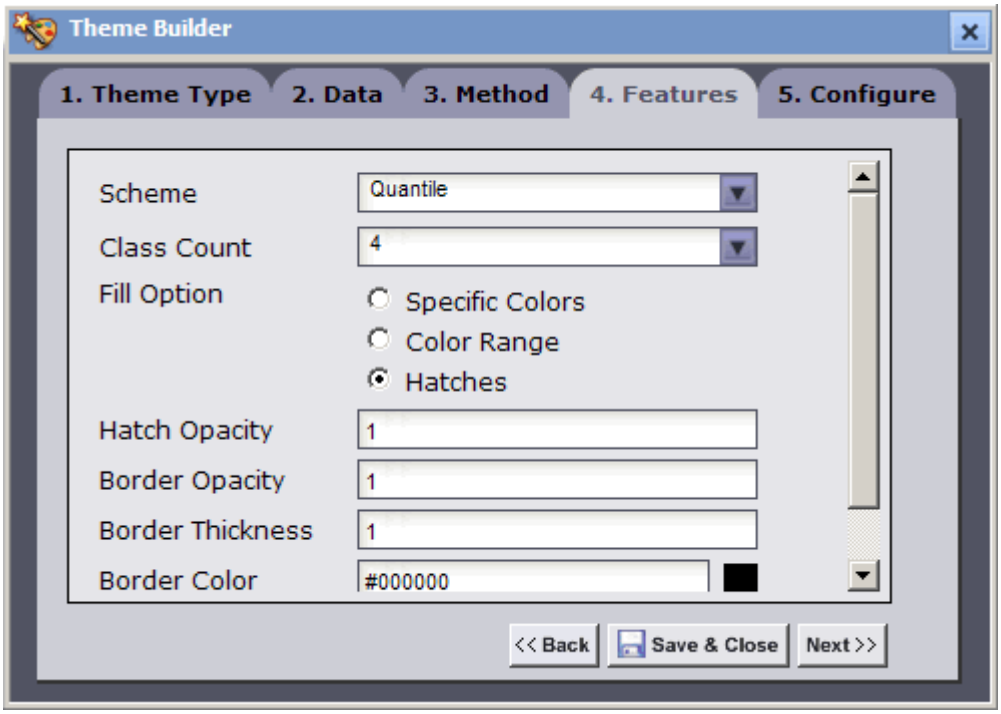


Figure 137. Theme Builder Wizard: Features Tab (Numeric- Automatic – Hatches).

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).
6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
8. Click the **Class 1** hatched rectangle.
9. Select a hatch from the picker.
10. Repeat Steps the above steps for each class listed.

11. Click the **Empty Hatch** hatched rectangle.

12. Select a hatch for any region that does not contain any values.

Note The hatched rectangles will change to the new hatch after each selection.

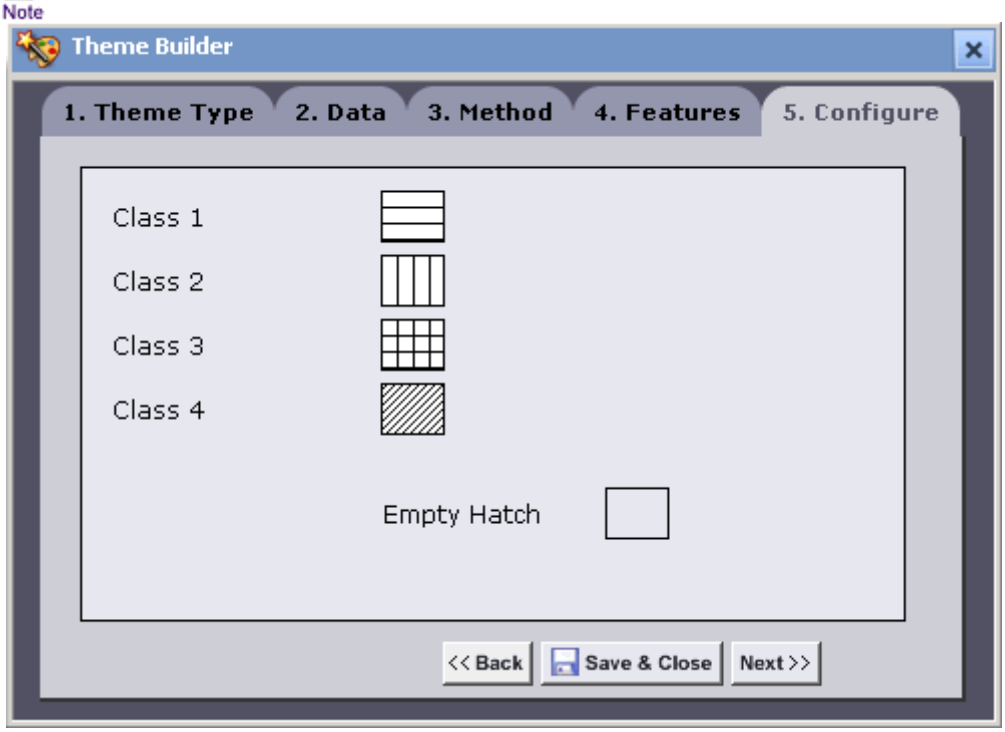


Figure 138. Theme Builder Wizard: Configure Tab (Numeric- Automatic – Hatches).

13. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Hatch Theme Section** of the Area Group Layer configuration screen.

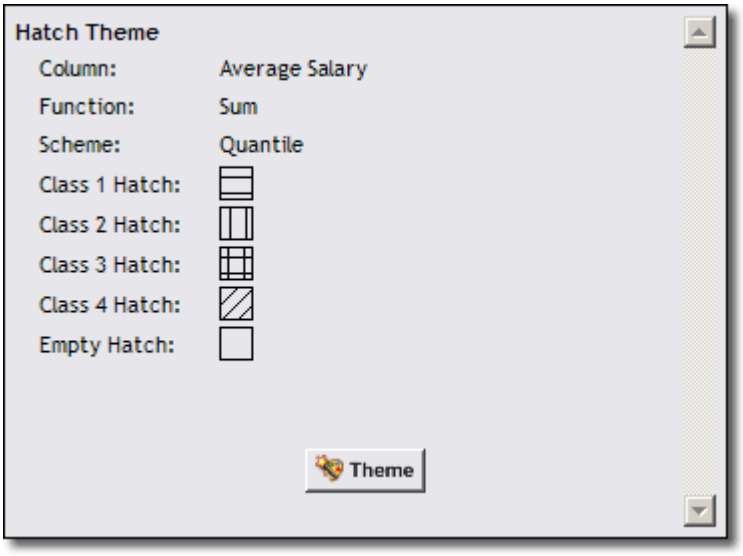


Figure 139. Themes Section showing Hatched Theme.

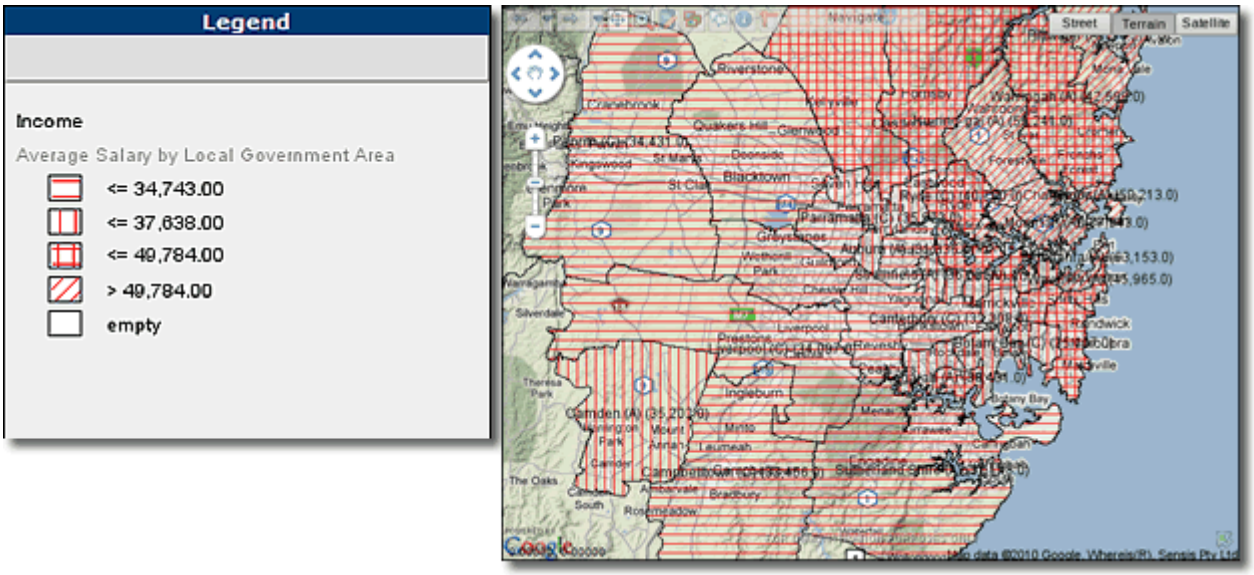


Figure 140. Area Group Layer Map View and Legend showing Hatched Theme.

MANUAL METHOD

1. From the **Method** tab, select the **Manual** radio button.

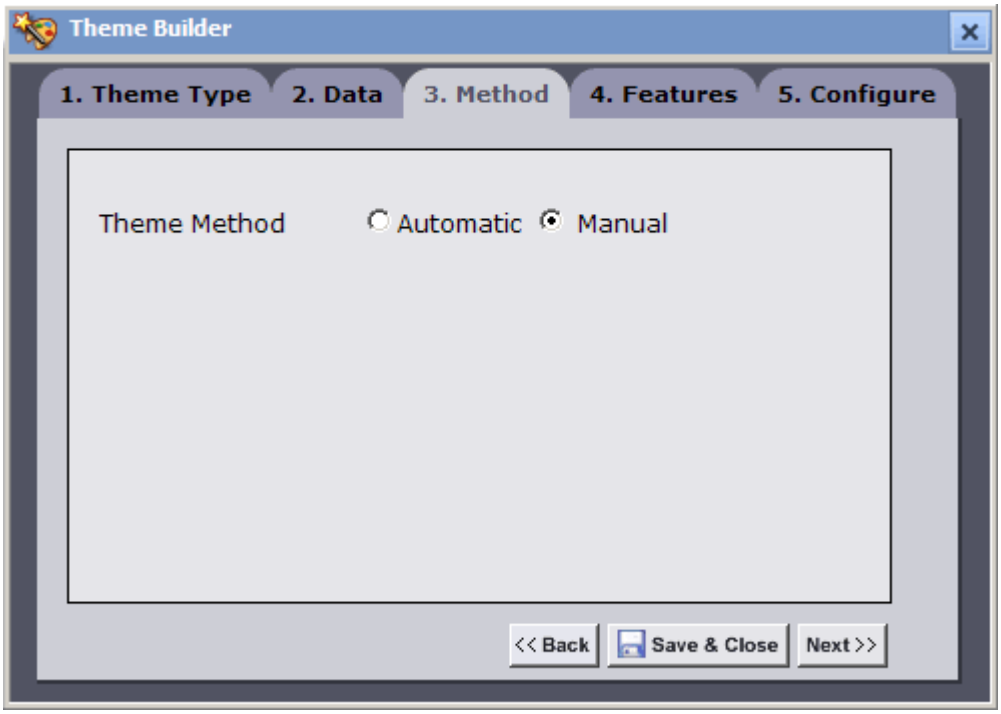


Figure 141. Theme Builder Wizard: Method Tab (Numeric-Manual).

2. Click the **Features** tab or the **Next** button, the wizard will move to the **Features** tab.

   There are two options for selecting the **Fill Option**:

   - **Colors:** Allows you to specify a particular color.
   - **Hatches**. Allows you to specify a particular hatch.

SELECTING COLORS

1. Click the **Colors** radio button.

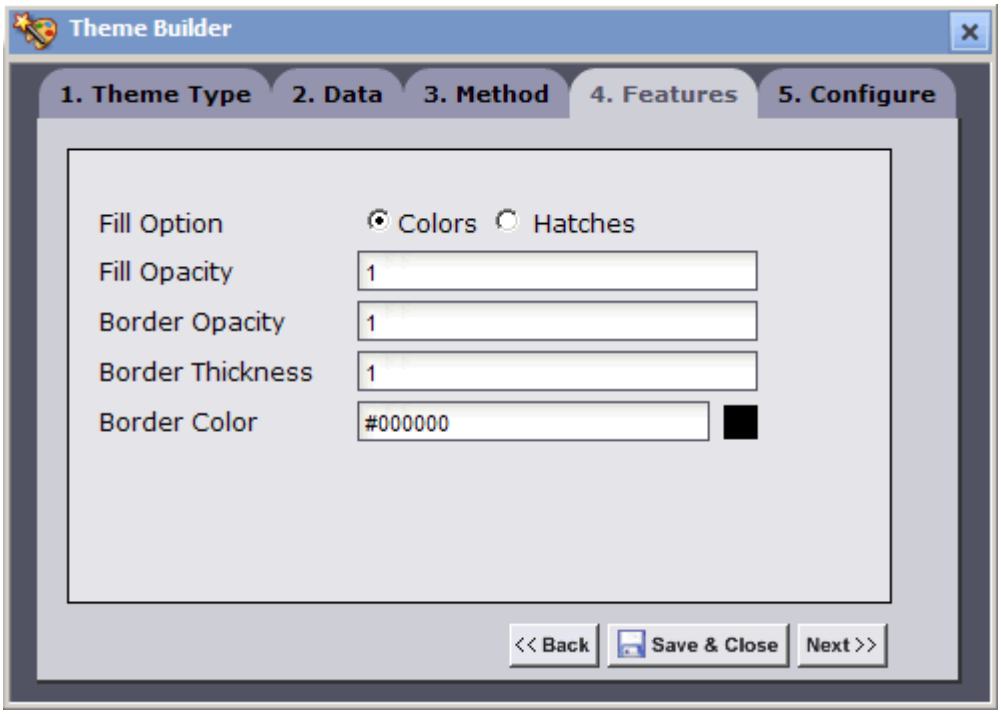


Figure 142. Theme Builder Wizard: Features Tab (Numeric-Manual-Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

7. Enter a threshold value in the top text box.

8. Click the rectangle next to the text box.

9. Select a color from the color picker that you want to associate with the threshold value.

   The selected threshold value and associated color will appear in the preview window list.

10. Configure all other threshold conditions that you wish to associate with a color.

11. Click the **Values Outside Threshold** rectangle, then select a color from the color picker to represent any other values that have not been assigned a specific color.

12. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any region that does not contain any values.

13. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

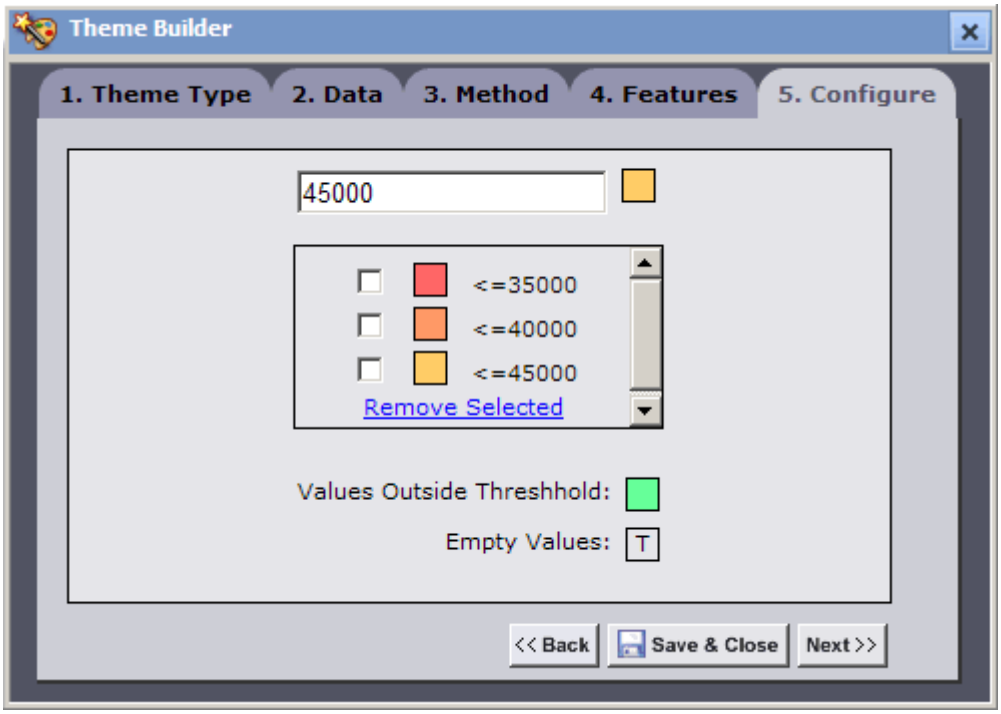


Figure 143. Theme Builder Wizard: Configure Tab (Numeric-Manual-Colors).

14. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.

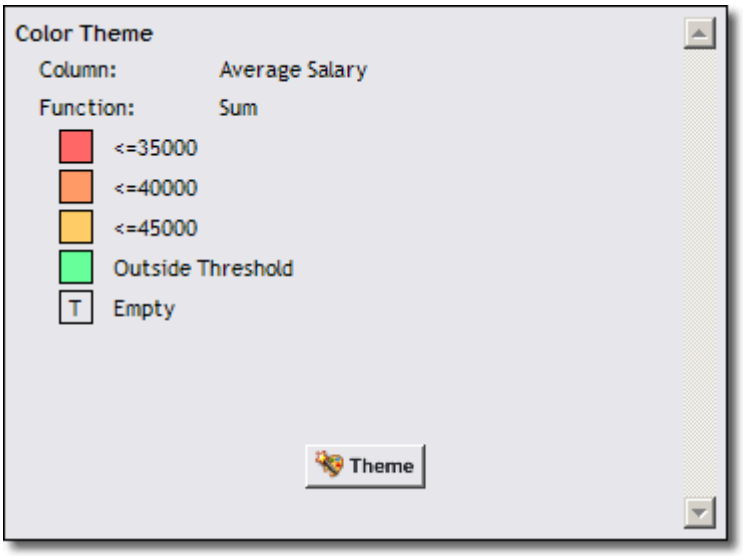


Figure 144. Color Themes Section (Numeric-Manual-Colors).

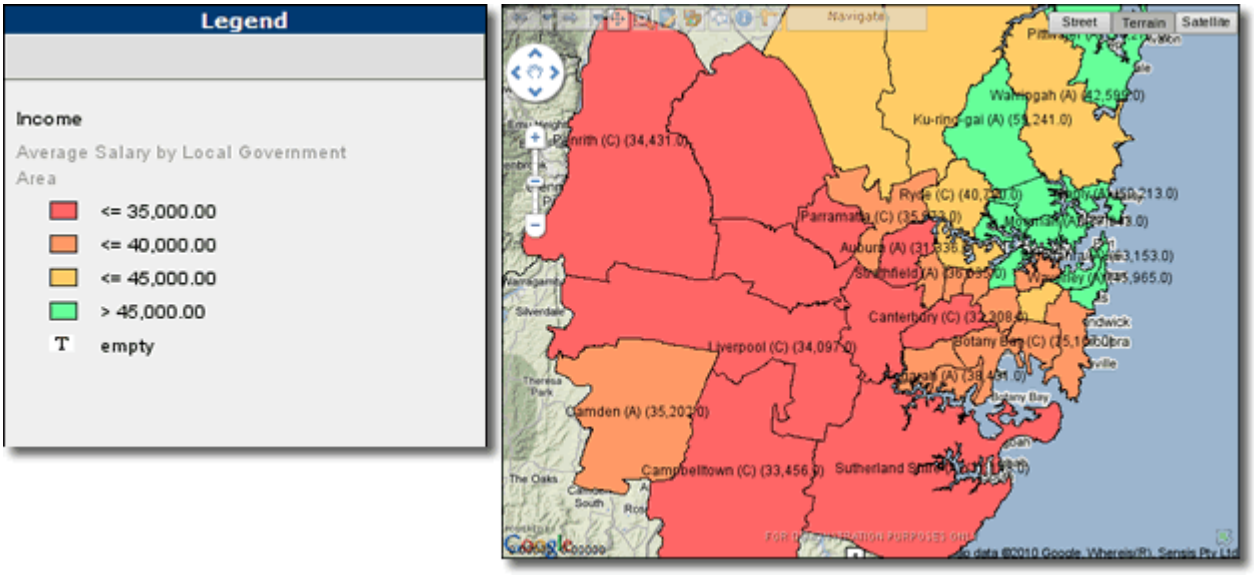


Figure 145. Area Group Layer Map View and Legend showing Manual Color Theme.

SELECTING HATCHES

1. Click the **Hatches** radio button.

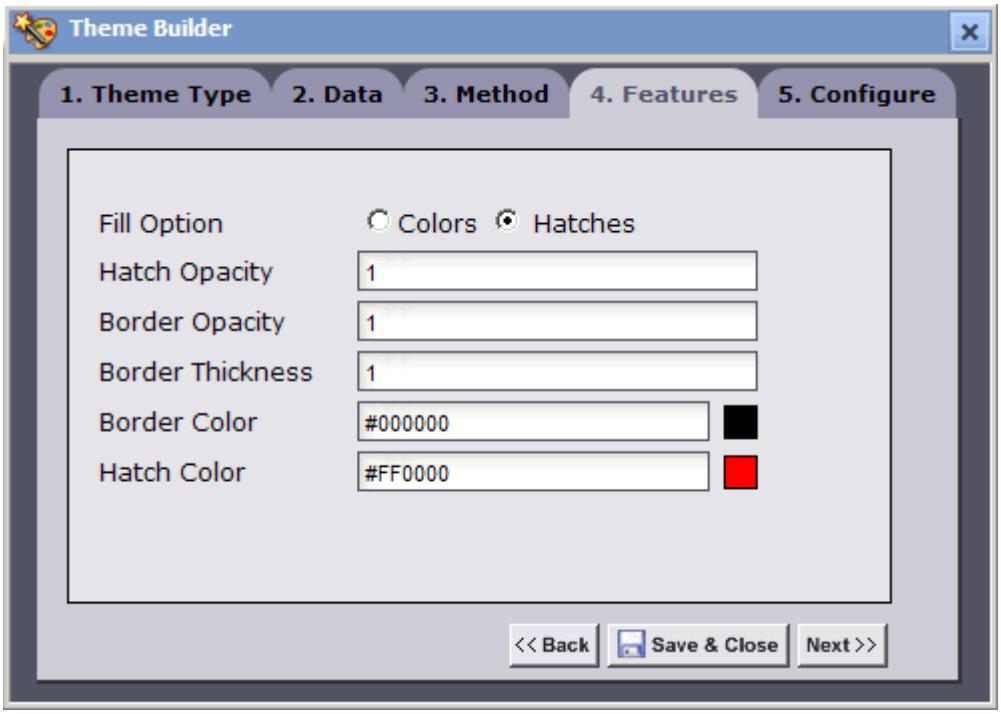


Figure 146. Theme Builder Wizard: Features Tab (Numeric-Manual-Hatches).

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).
6. In the **Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
8. Enter a threshold value in the top text box.
9. Click the rectangle next to the text box.

10. Select a hatch from the picker that you want to associate with the threshold value.

    The selected threshold value and associated hatch will appear in the preview window list.

11. Configure all other threshold conditions that you wish to associate with a hatch.

12. Click the **Values Outside Threshold** rectangle, then select a hatch from the picker to represent any other values that have not been assigned a specific hatch.

13. Click the **Empty Values** rectangle, then select a hatch from the picker to represent any region that does not contain any values.

14. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

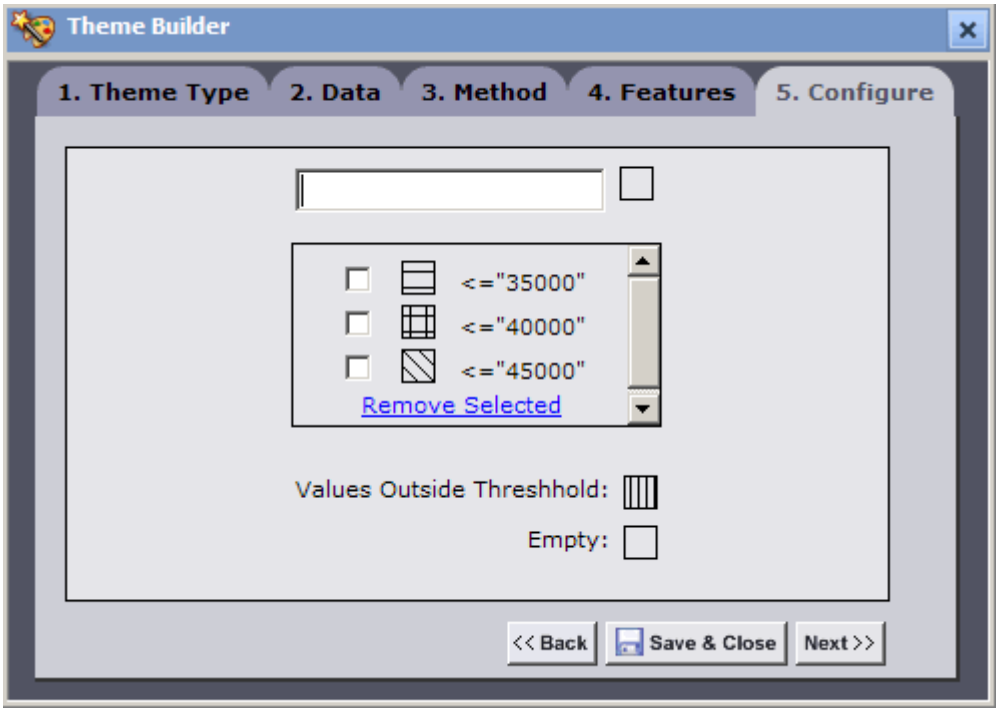


Figure 147. Theme Builder Wizard: Configure Tab (Numeric-Manual-Hatches).

15. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.

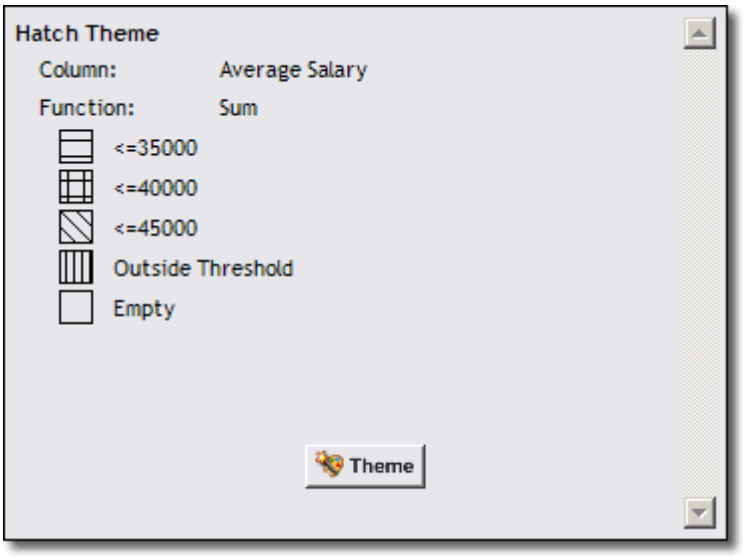


Figure 148. Hatch Theme Section (Numeric-Manual-Hatch).

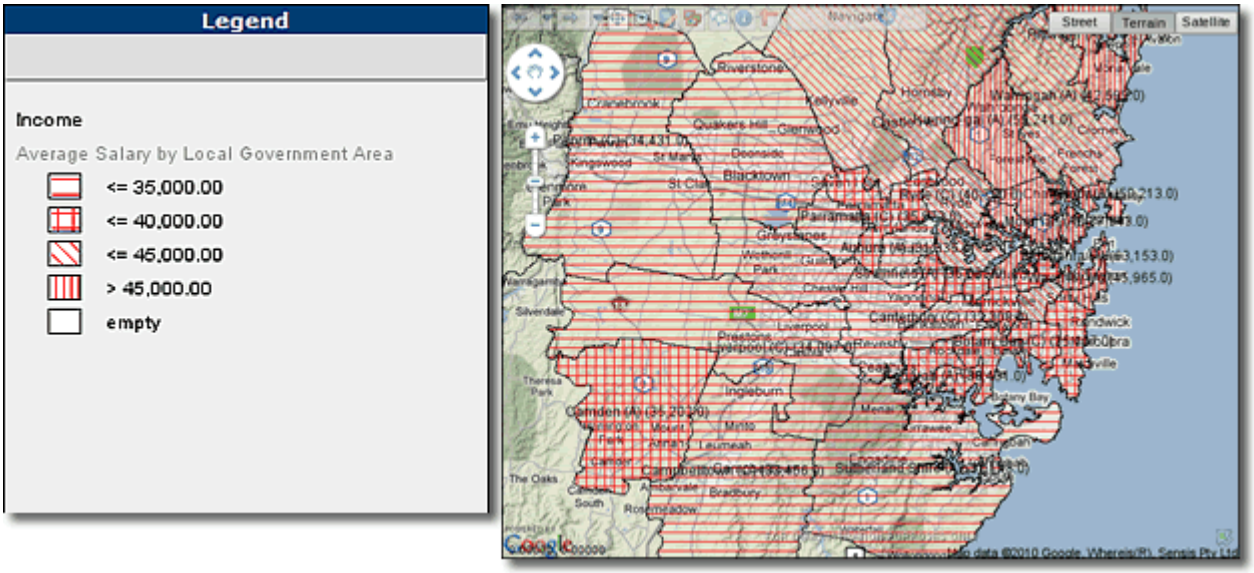


Figure 149. Area Group Layer Map View and Legend showing Manual Hatch Theme.

UNSHADED AND TRANSPARENT COLORS

For further information on using the Transparent and Unshaded color options see Appendix C: Using the Unshaded and Transparent Color Options on page 141.

STRING AGGREGATION

Map Intelligence allows you to perform a function on string values from a specified fact column. String aggregations require you to specify a color/hatch condition for a specific value instead of a threshold. The string functions available include:

- **Most Common** – this function applies the condition if the nominated value is the most common value in the region.
- **Uniform** – this function applies the condition if the nominated value is the only value from the specified column in the region.
- **Majority** – this function applies the condition if the nominated value makes up more than half of the values in the region.

Creating a themes based on a String Aggregation

1. Click the Theme button

, the Theme Builder wizard will open, displaying the Theme Type tab.

2. The Fact Column drop down list will display the column you selected for the Fact Column on the Area Group Layer configuration screen. If you wish to change the column, select the another column from the **Fact Column** drop-down list.

3. Select the **String** radio button.

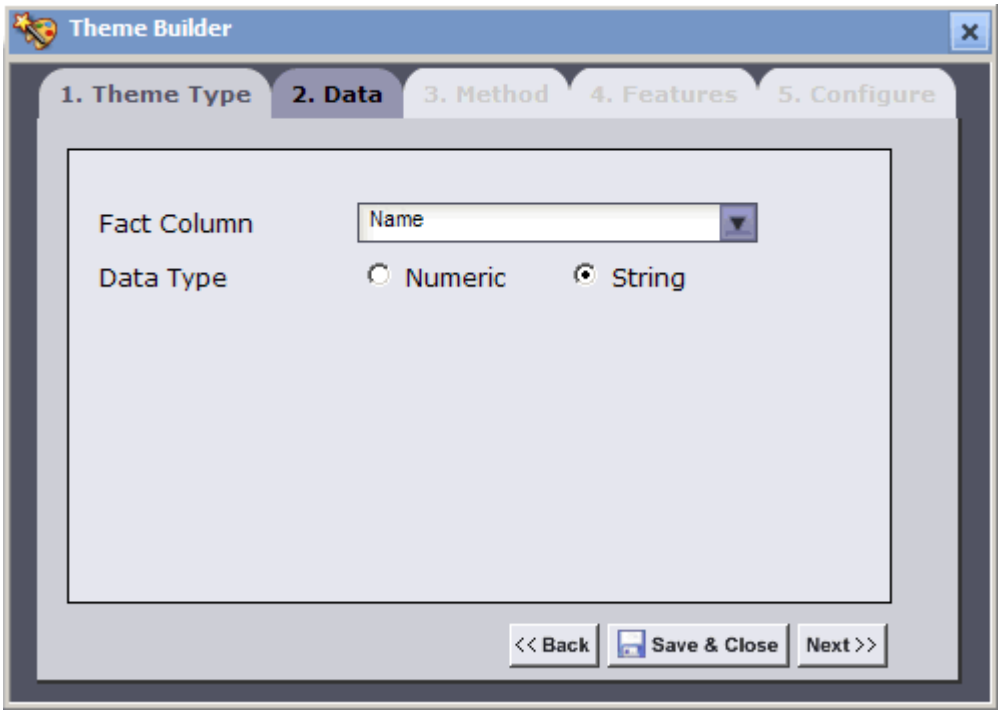


Figure 150. Theme Builder Wizard: Theme Type Tab (String).

4. Click the **Data** tab or the **Next** button, the wizard will move to the **Data** tab.

5. From the **Aggregation Function** drop-down list, select the function to use for the layer. The string functions available are: Most Common, Uniform and Majority.

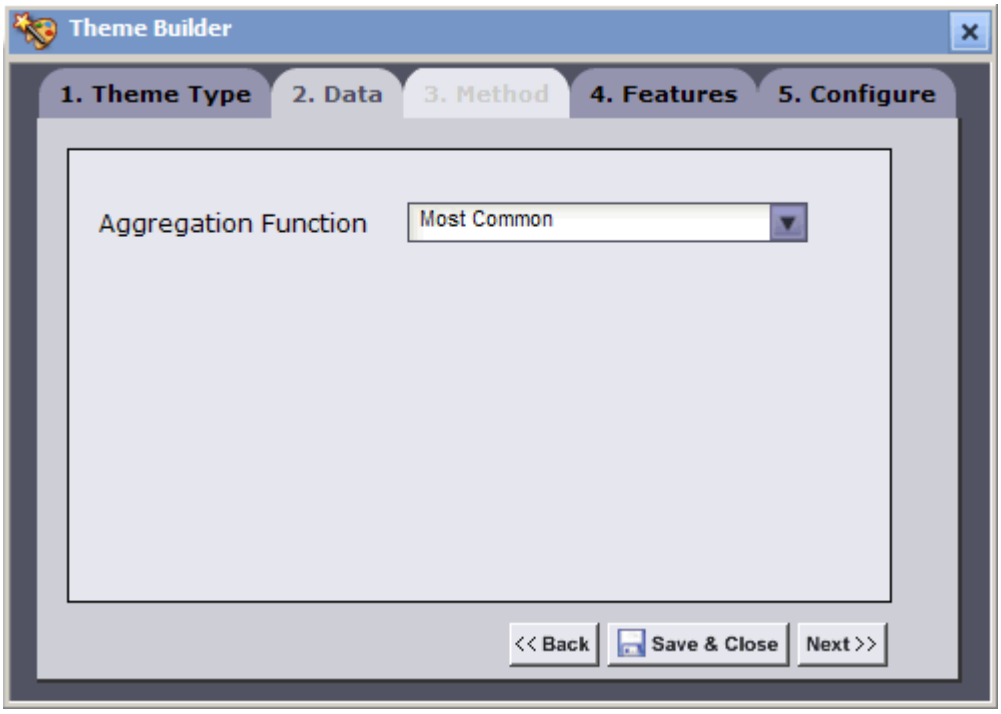


Figure 151. Theme Builder Wizard: Data Tab (String) with 'Most Common' selected.

6. Click the **Features** tab or the **Next** button, the wizard will move to the **Features** tab.

   There are two options for selecting the **Fill Option**:

   - **Colors:** Allows you to specify a particular color.
   - **Hatches**. Allows you to specify a particular hatch.

SELECTING COLORS

1. Click the **Colors** radio button.

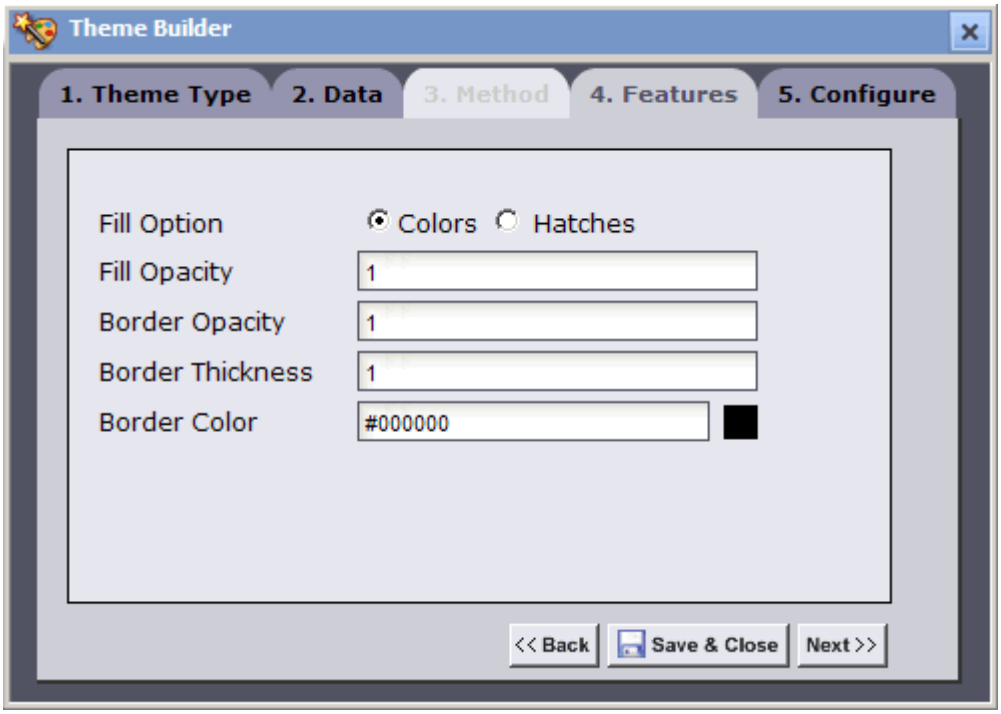


Figure 152. Theme Builder Wizard: Features Tab (String – Colors).

Features Rendering Attributes

2. In the **Fill Opacity** field, enter a number from 0 to 1 that indicates the opacity of the colored regions in the layer.

3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.

4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.

5. In the **Border Color** field, enter a hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

6. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.

7. The top drop-down list will display all available values from the specified fact column. Select a value from the top drop-down list.

Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take sometime to process.

8. Click the rectangle next to the top drop-down list.

9. Select a color from the color picker that you want to associate with the selected value.

   The selected value and associated color will appear in the preview window list.

   Tip If the color picker does not have the exact color you wish to use, you can right click on the colored rectangle and manually enter the hexadecimal color value.

10. Configure any other values that you wish to associate with a color.

    Note Any values not assigned a specific color will be colored according to the color assigned to **Other Values** (see below).

11. Click the **Empty Values** rectangle and select a color from the color picker to represent any region that does not contain any values.

7. Click the **Conflict Values** rectangle and select a color from the color picker to represent any region that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

12. Click the **Other Values** rectangle and select a color from the color picker to represent any values that have not been assigned with a specific color.

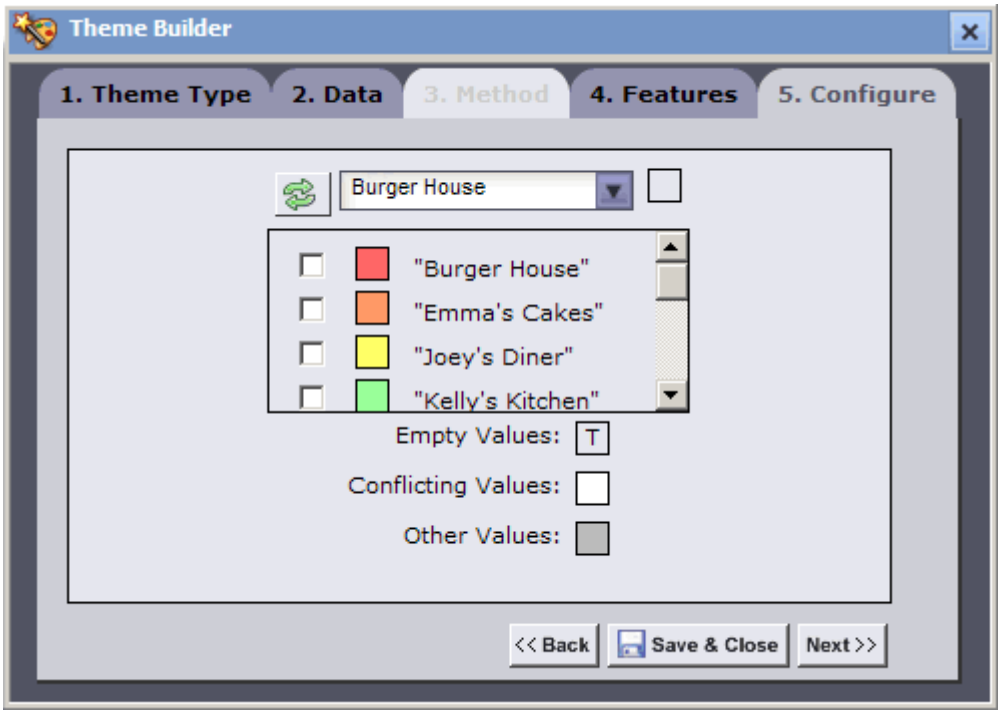


Figure 153. Theme Builder Wizard: Configure Tab (String – Colors).

13. To delete values assigned to a specific color, in the Preview window list, click the check box next to the value and click **Remove Selected**.

14. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.

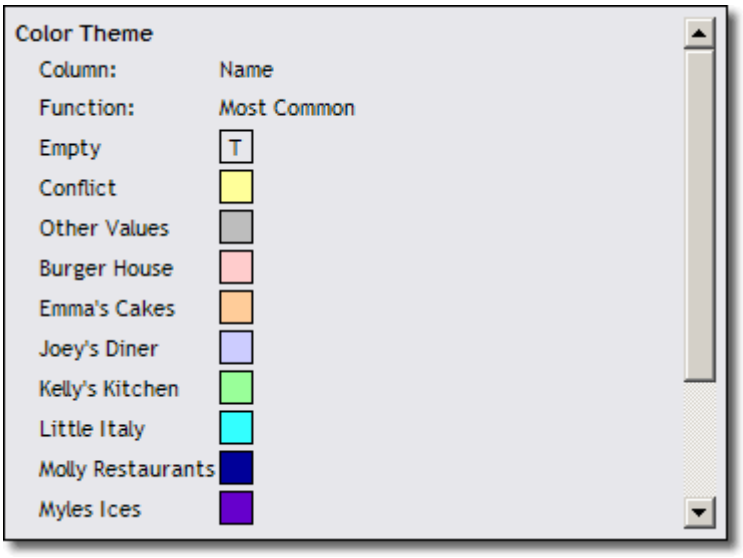


Figure 154. Color Theme (String – Colors).

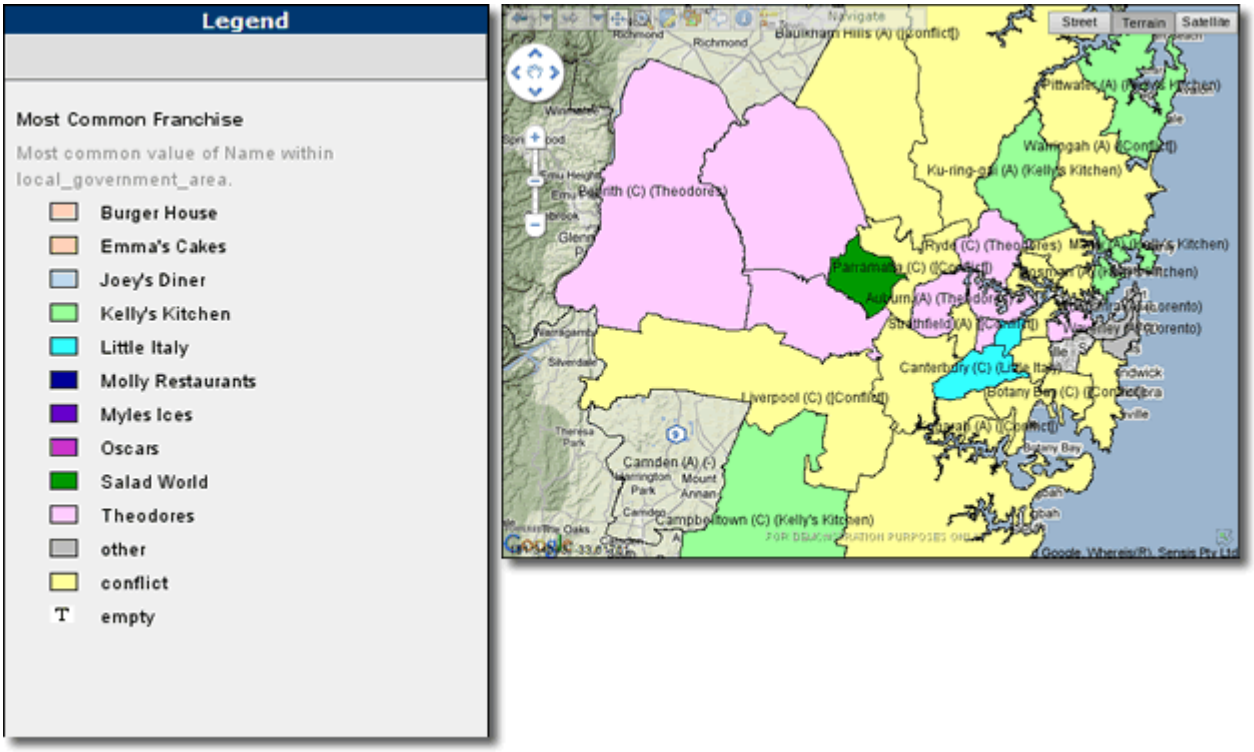


Figure 155. Area Group Layer Map View and Legend showing Color Theme (String – Colors).

SELECTING HATCHES

1. Click the **Hatches** radio button.

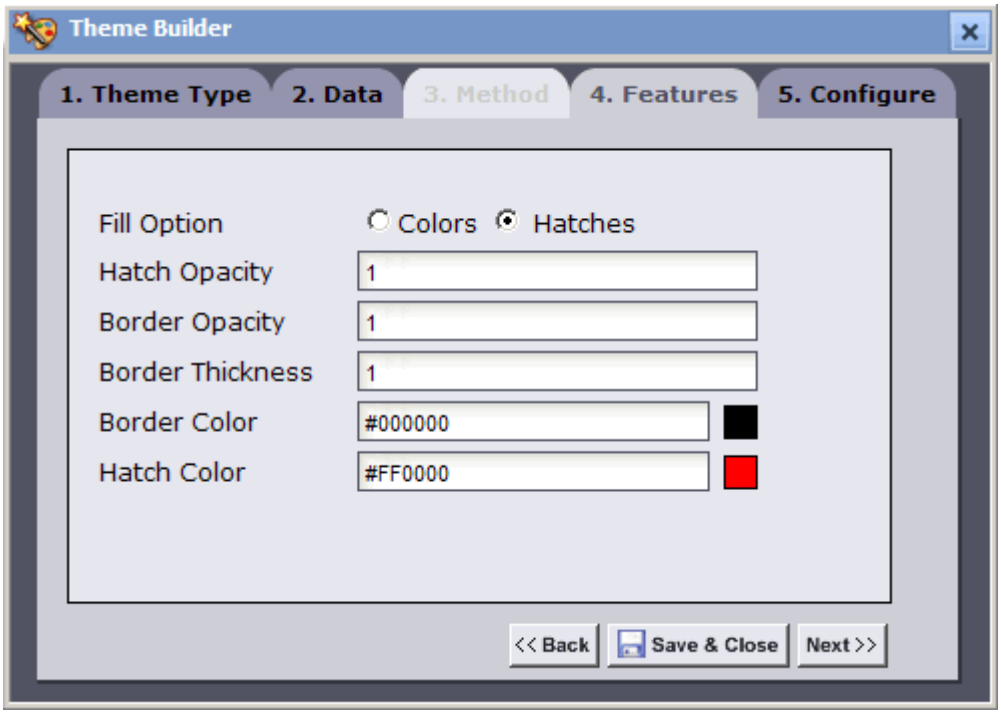


Figure 156. Theme Builder Wizard: Features Tab (String – Hatches).

Features Rendering Attributes

2. In the **Hatch Opacity** field, enter a number from 0 to 1 that indicates the opacity of the hatches.
3. In the **Border Opacity** field, enter a number from 0 to 1 that indicates the opacity of region borders in the layer.
4. In the **Border Thickness** field, enter the thickness in points or pixels (depending on the GIS provider) of the region borders in the layer.
5. In the **Border Color** field, enter the hexadecimal color value or select a color from the color picker for the region border color. The default color is black (#000000).
6. In **the Hatch Color** field, enter a hexadecimal color value or select a color from the color picker for the hatch color. The default color is black (#000000).

Note Examples of using various Feature Attributes can be seen in Appendix B: Features Rendering Attributes on page 137.

7. Click the **Configure** tab or the **Next** button, the wizard will move to the **Configure** tab.
8. The top drop-down list will display all available values from the specified fact column. Select a value from the drop-down list.

Note In some instances only a sub-set of values will be displayed in the value list box. Click the refresh button to display all values. Be aware that large datasets may take sometime to process.

9. Click the rectangle next to the top drop-down list.

10. Select a hatch from the picker that you want to associate with the selected value.

    The selected value and associated hatch will appear in the preview window list.

11. Configure any other values that you wish to associate with a hatch.

    Note Any values not assigned a specific hatch will be hatched according to the hatch assigned to **Other Values** (see below).

12. Click the **Empty Values** rectangle and select a hatch from the picker to represent any region that does not contain any values.

13. Click the **Conflict Values** rectangle and select a hatch from the picker to represent any region that does not meet any specified condition. E.g. A Conflict condition will be returned if the 'Uniform' function has been set and there is more than one type of value present in the region.

14. Click the **Other Values** rectangle and select a hatch from the picker to represent any values that have not been assigned with a specific hatch.

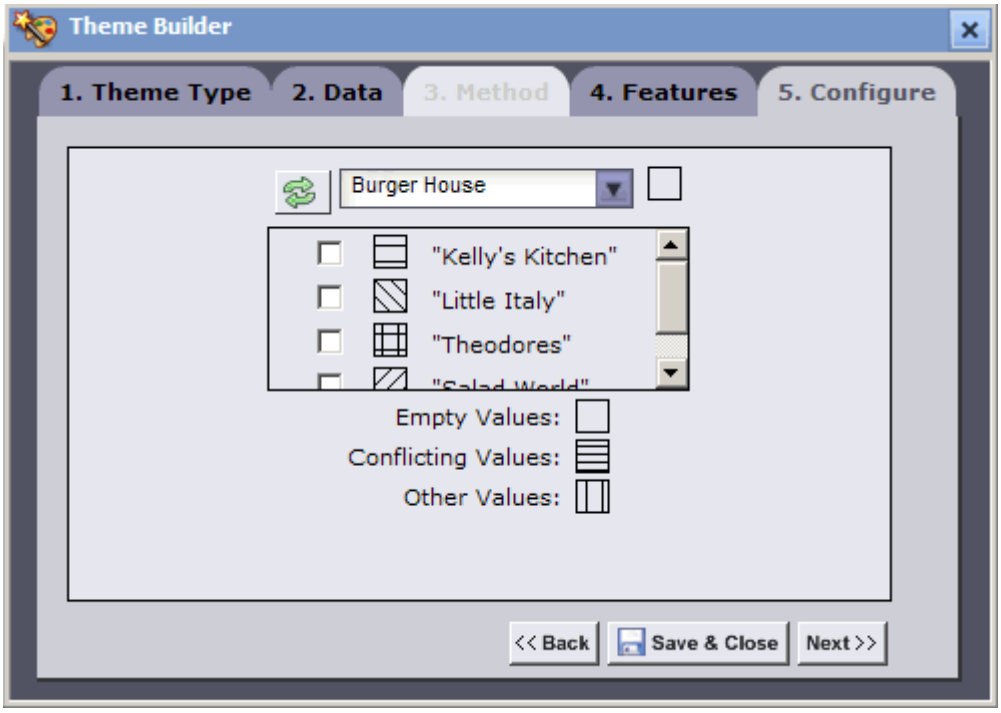


Figure 157. Theme Builder Wizard: Configure Tab (String – Hatch).

15. To delete values assigned to a specific hatch, in the Preview window list, click the check box next to the value and click **Remove Selected**.

16. Click the **Save & Close** button

. The Theme Builder Wizard will close. The theme will now be displayed in the **Theme Section** of the Area Group Layer configuration screen.

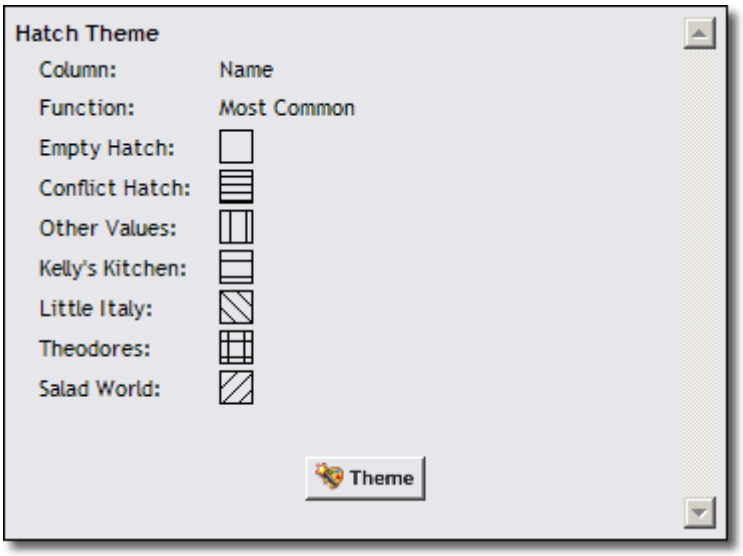


Figure 158. Hatch Theme (String – Hatch).

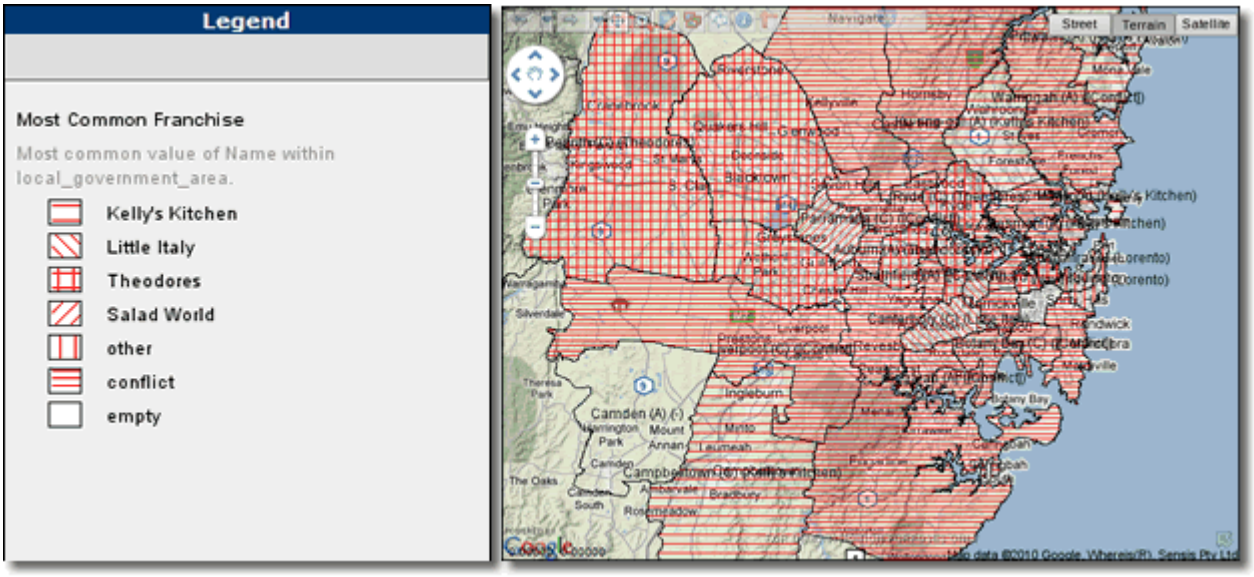


Figure 159. Area Group Layer Map View and Legend showing Hatch Theme (String – Hatch).

UNSHADED AND TRANSPARENT COLORS

For further information on using the Transparent and Unshaded color options see Appendix C: Using the Unshaded and Transparent Color Options on page 141.

TO TEST YOUR SETTINGS

➤ ***To test the Area Group Layer configuration***

1. From the **Main Menu**, click the **Test** button

. A Browser will open displaying your layer configuration. The Layer will also be listed in the **Layer Directory** to the right of the screen.

SAVING THE LAYER

To save the Area Group Layer configuration

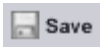
1. From the **Main Menu**, click **Save** button to save your settings.
2. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The Layer will be saved and listed in the **Layer Directory** to the right of the screen.

   The save button will save **all** changes made to **all** configuration screens.

EDITING A LAYER

To edit an Area Group Layer configuration

1. From the Layer Directory, click on the plus icon next to Area Group Layers. The Area Group Layer section will expand.
2. Click on the Area Group Layer you want to edit, the layer configuration screen will open for editing.
3. Save your changes by clicking the click Save button  on the Main menu.
4. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

COPYING A LAYER

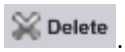
To copy an Area Group Layer

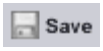
1. From the **Layer Directory**, click on the plus icon next to **Area Group Layers**. The Area Group Layer section will expand.
2. Click on the **Area Group Layer** you want to copy, the layer configuration screen will open.
3. From the **Main Menu**, click the **Copy** button . A copy of the layer will appear.
4. In the **Layer Name** field, enter a new name for the layer.
5. Save your changes by clicking the **Save** button on the top menu. The new layer will appear in the Layer Directory.
6. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

   The save button will save **all** changes made to **all** configuration screens.

DELETING A LAYER

To delete an Area Group Layer

1. From the **Layer Directory**, click on the plus icon next to **Area Group Layers**. The Area Group Layer section will expand.
2. Click on the **Area Group Layer** you want to delete, the layer configuration screen will open.
3. From the **Main Menu**, click the **Delete** button 

.
4. Save your changes by clicking the **Save** button 

on the top menu.
5. A message box will appear stating your "Configuration saved successfully", click the **OK** button.

The save button will save **all** changes made to **all** configuration screens.

NOTE ON DATA FORMAT

Map Intelligence, by default, will place commas in numbers greater than 999. You can change the format by specifying the column format in the universe. This only applies to columns with numeric values.

LOGGING OFF AND ENDING BI SESSION

If you logged on to the MI Client via the Reports page, it is advisable to end your BI session to free resources.

➢ To log off from the MI Client and end your BI Session

1. From the Main Menu, click the **Log Off** button **.**

SELECTION

CONFIGURING LAYERS FOR SELECTIONS

The **Selection** tool allows users to select points from the map or regions of built in maps and bring them back to the report as filters.

The **Id Column** in the Points Properties section of the Point Layer Configuration screen or the **Data Source Join Column** in the Data Source section of the Area Group Layer Configuration screen the is used to specify the specific column from the Layer that will be available for selection.

1. From the **Id Column** drop-down list, select a column that contains unique values to be used to identify individual points when using the Selection Tool.

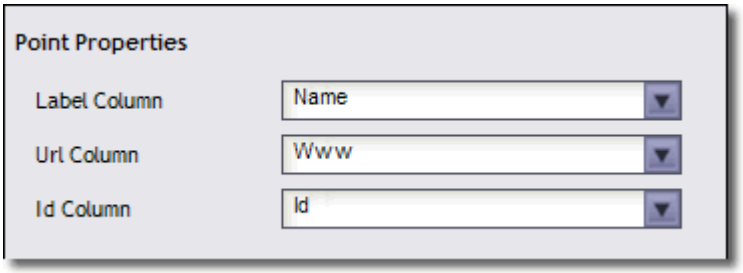


Figure 160. Point Layer Configuration screen – Point Properties section - Id Column.

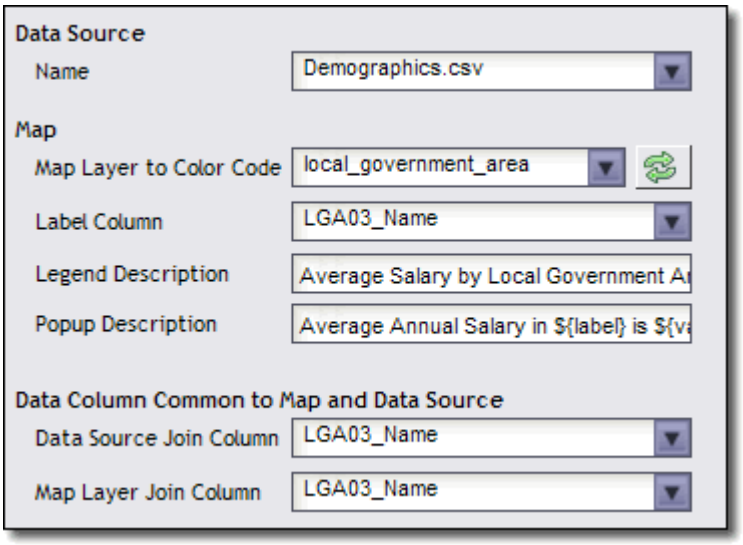


Figure 161. Area Group Layer Configuration screen – Data Source section – Data Source Join Column.

MAKING A SELECTION FROM THE MAP

For information on how to make a selection from the map, see the *Foreground Tools, Selection* section of the *Mapping Viewer User Manual*.

ACCESSING SELECTIONS – ROUND TRIP

To access your selections from the Report

1. Click the **Apply** button on the Dashboard Filter.

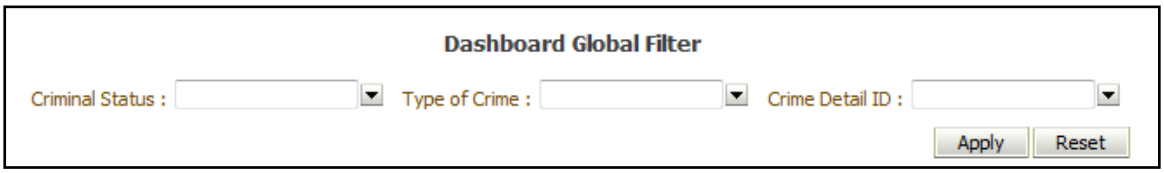


Figure 162. Dashboard Global Filter

To access your selections from the Mapping Viewer

2. Click the **Apply Selection Filter** button on the Dashboard Filter.

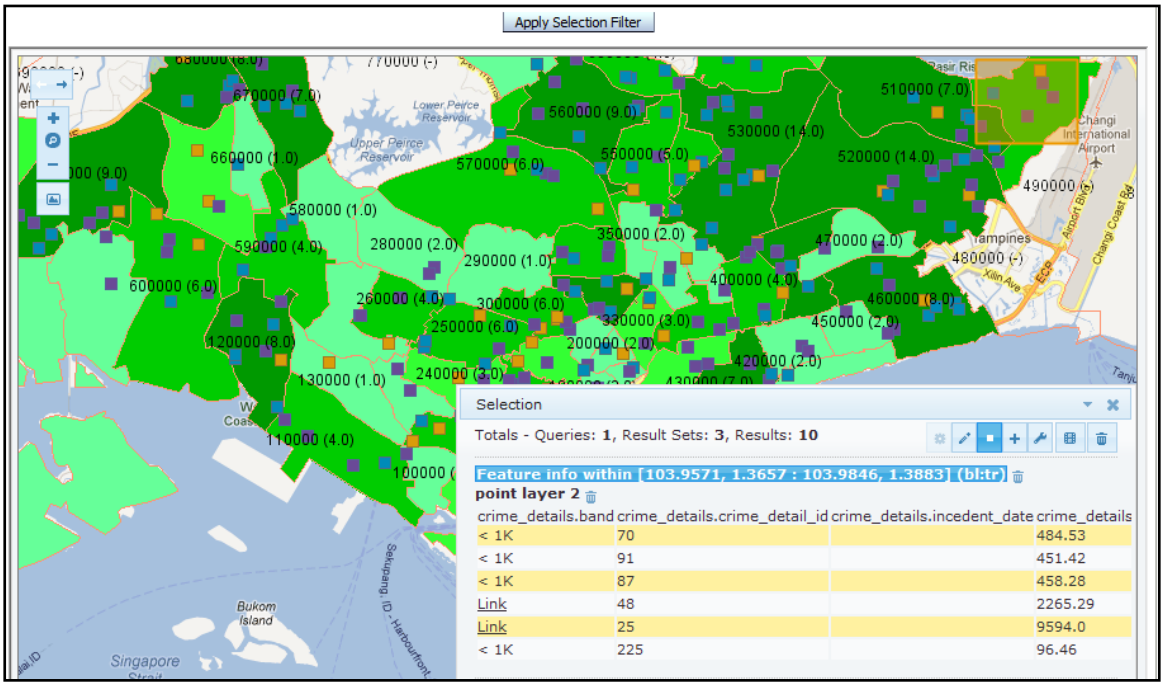


Figure 163. Mapping Viewer with Apply Selection Filter button.

ADVANCED TOPICS

AUTO PILOT MODE

The Auto Pilot Mode (APM) controls some of the Map Intelligence Tools depending on the document being manipulated by the Client. For example, based on the name of a business intelligence document, a Layer Designer can control:

- what plugins must be excluded;
- what plugins must be deactivated, and
- what plugins must be activated and how.

An excluded plugin will not even appear in the list of plugins usually visible when the user clicks the **Tools** menu button in the Map Intelligence **Mapping Viewer**.

Auto Pilot mode requires some programming and access to the Map Intelligence server.

INDEPENDENT MAPS AND LEGENDS

This section explains how to extract components of the Map Intelligence GUI and display them separately within a MI Client and retrieve printed images based on print templates.

MAPS

Independent maps can be retrieved as images and they are also implemented as tags that can be embedded in jsp's. They can also be invoked directly from an HTML request. Using the tag method, the map can be requested as an image only, or it can be interactive.

IMAGES

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
w	Determines the width of the map in pixels	No
h	Determines the width of the map in pixels	No

If the width and height are not specified then the size of the map will be the size from the current user session.

The client retrieves a legend by contacting the configuration server. The following url will retrieve a map:

```
http://[machine-name]:[port-number]/miclient/getMapImage
```

Example

To request a map with width 400 and height 400, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/miclient/getMapImage?userid=123456&w=400&h=400" alt="map">
```

where the machine-name and port-number are those of the configuration server

TAGS

The tag creates a map image based on the main map image but scaled to the required size (usually smaller). Attributes can be set for a border and an action to be applied when the image is clicked on. If no height is given then the scale is based on the width of the map image and vice versa, based on the aspect ration of the main map settings.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
map-image-width	The width in pixels of the map. NOTE that the width will be coerced to the aspect ratio of the main map if it turns out that the suggested width is greater than the width derived from the scaling of the main map maintaining its aspect ratio. The default value is the width of the main map.	No
map-image-height	The height in pixels of the map. NOTE that the height will be coerced to the aspect ratio of the main map if it turns out that the suggested height is greater than the height derived from the scaling of the main map maintaining its aspect ratio. The default value is the height of the main map.	No
map-image-not-clickable	Set to “true” if you do not want the map image to be interactive. The default value is “false”, i.e. interactive. As an interactive map it will use the last foreground tool selected, or the zoom to marquee navigation setting.	No
map-image-border	You can set a border around the map as a number of pixels. The default value is “0” or no border.	No

Here is an example in an iframe:

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
</head>
<body onload="javascript:document.forms0.submit(); document.forms1.submit();
return true">
<iframe name="mapImage" width=400 height=300 frameborder=0></iframe>
<form action="http://localhost:11090/mapIntelligence/componentServlet"
method="post" target="mapImage">
<input type="hidden" name="frontendComponent" value="map-image-component"/>
<input name="userid" type="hidden" value="529433402750725595452649594 5">
<input name="map-image-width" type="hidden" value="320">
<input name="map-image-height" type="hidden" value="240">
<input name="map-image-not-clickable" type="hidden" value="true">
```

```
<input name="map-image-border" type="hidden" value="2">
</form>
</body>
</html>
```

Only the width or the height need be set but if both are set then the image is scaled based on a minimum of the scales resulting from the width and height to the original Map Intelligence viewer width and height. The aspect ratio of the original image is preserved.

LEGEND

Previously the image was a jsp that generated html to render the legend in the browser. It is now returned by a servlet as an image. The servlet is named /mapIntelligence/getLegendImage and has the following parameters available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
size	Determines the look and feel of the legend. If none is specified, the look and feel with an id of 1 is used. See Look and Feel below for more information.	No

The client retrieves a legend by contacting the configuration server. The following url will retrieve a legend:

```
http://[machine-name]:[port-number]/miclient/getLegendImage
```

Example
To request a legend using the look and feel set of 2, the following url would be used:

```
<img src="http://[machine-name]:[port-
number]/miclient/getLegendImage?userid=123456&size=2" alt="legend">
```

where the machine-name and port-number are those of the configuration server.

LOOK AND FEEL

To obtain the desired look and feel of the independent legend refer to the *Technical Note: Legend Customization*.

PRINTED IMAGES

The results of printing with a print template can be returned as an image. For details on what print templates are and creating them, see the technical note on Creating a Print Template.

The following parameters are available:

Parameter Name	Value	Required
userid	The id of the user that defines the users session	Yes
template	The name of the print template to use.	No
p_	Custom parameters defined in the template can be passed by prefixing their parameter names with _p	No

The client retrieves a print template image by contacting the configuration server. The following url will retrieve a legend:

```
http://[machine-name]:[port-number]/miclient/getPrintTemplate
```

Example

To request the default print template image and pass the custom parameters w and h, the following url would be used:

```
<img src="http://[machine-name]:[port-number]/miclient/getPrintTemplate?
userid=123456&template=default&p_w=400&p_h=400" alt="legend">
```

where the machine-name and port-number are those of the configuration server.

TROUBLESHOOTING

This section will provide description and solution of the most common issues.

CLIENT LOGIN ISSUES

Problem Description	*Solution/s*
"Invalid login/password/server combination." When logging in to the Client Configuration Server, this message immediately displays even when the credentials entered are correct.	➢ Check if the Oracle BI Services are already running.

GLOBAL SETTINGS ISSUES

Problem Description	*Solution/s*
"Failed to read maps from server." This message displays when retrieving available map from the Map Intelligence Server.	➢ Check if the server and port settings entered on the **Map Intelligence Server** field are correct. ➢ Check if the Map Intelligence Server (and included GIS servers) is already running.

LAYER ISSUES

Problem Description	*Solution/s*
"Failed to extract data from <DataSource name> data source. No data was returned." This message displays when retrieving available map from the Map Intelligence Server.	➢ Check the test-max-rows and the max-rows properties in the client.properties file. These properties limit the 1. number of retrieved records to the *BI Server* and 2. number of data to be displayed in the Theme Builder respectively. Refer to the client.properties section for more information.
"Failed to save the configuration. The following reason was provided:The required parameters `<layer-name>-<theme-name>-value-1` and `<layer-name><theme-name>-icon-1` are missing" There is a missing value in the Theme that was created in the Theme Builder. The Column Name chosen contains a null value.	➢ If the chosen Column Name contains a null value and it is shown as a blank value in the Configure tab, check the "null-value" property in the client.properties file. Make sure that this property has a specified value and should not be blank.
Data Source Name drop-down list has no choices/values when using Internet Explorer as the web browser. Upon clicking the drop-down list, only a horizontal scrollbar appears	➢ Modify the Data Source Name (Analysis name for dashboard pages). Analysis name should have at least one blank space (e.g., "Crime_Analysis" should be "Crime Analysis").

DASHBOARD ISSUES

Problem Description	*Solution/s*
The map was not filtered when applying a filter on the dashboard.	➢ Make sure that the filter in the dashboard has a corresponding filter definition in the Analysis criteria. Check the criteria definition of Oracle Analysis. ➢ Check the value of the filter applied. Map filtering will not work if the filter contains a value of '"+"' (double quote-plus sign-double quote) or "%"(percent sign). ➢ Check the report code if the Request Parameters submitted are complete (see Appendix D). Also make sure that the parameter names are typed correctly, since it is case sensitive.
The map was not filtered when applying a selection filter.	➢ Check if there is a defined **Id Column** in the dashboard/request configuration. ➢ Check if the **Id column** is also defined as a filter in the request criteria. ➢ Check if the **Id column** is included as a dashboard prompt having a "Multi Select" control. ➢ Check the selected data. Selection filter will not work correctly if the selected data is a combination of a null and a non-null values. ➢ Check that the Subject Area referenced to the Analysis' criteria matches the FROM clause of the SQL on the Analysis' *Advanced* tab.

MAP RENDERING ISSUES

Problem Description	*Solution/s*
"Connection refused: connect." This message displays on the Mapping Viewer.	➢ Check if the Map Intelligence Server (and included GIS servers) is already running.
"Checksum failed." The map is not visible or there are no rendered points in the map. This message displays when the red exclamation point is clicked	➢ If during design time, Oracle Business Intelligence Enterprise Edition did not return any data, check the **`test-max-rows`** and **the `max-rows`** properties in the *client.properties* file. These properties limit the 1. number of retrieved records to the *BI Server* and 2. number of data to be displayed in the Theme Builder respectively. Refer to the client.properties section for more information.
"Layer <layer name> had an invalid value <value> in column <column name>	➢ The report field has an invalid data type (e.g. the field expecting a decimal value but it's data type is an integer). Also, check the data type of the **Longitude** and **Latitude** fields of the report referenced by the map. These should not be an integer type. Valid data types are *Single*, *Double* or *Decimal*.

APPENDICES

APPENDIX A: CLIENT METHODS

There are two methods available for sending requests from the Business Intelligence application. They are determined by the property <code>use-splash-screen<code> in the client.properties file (<install-dir>\webapps\miclient\WEB-INF\properties\client). By default, the value is set to false. The implications of choosing a particular method are described below.

use-splash-screen = true

The request is sent as described by the following diagram. While the route taken is less efficient, the Javascript security issues are eliminated. A splash screen is displayed when the map is being retrieved.

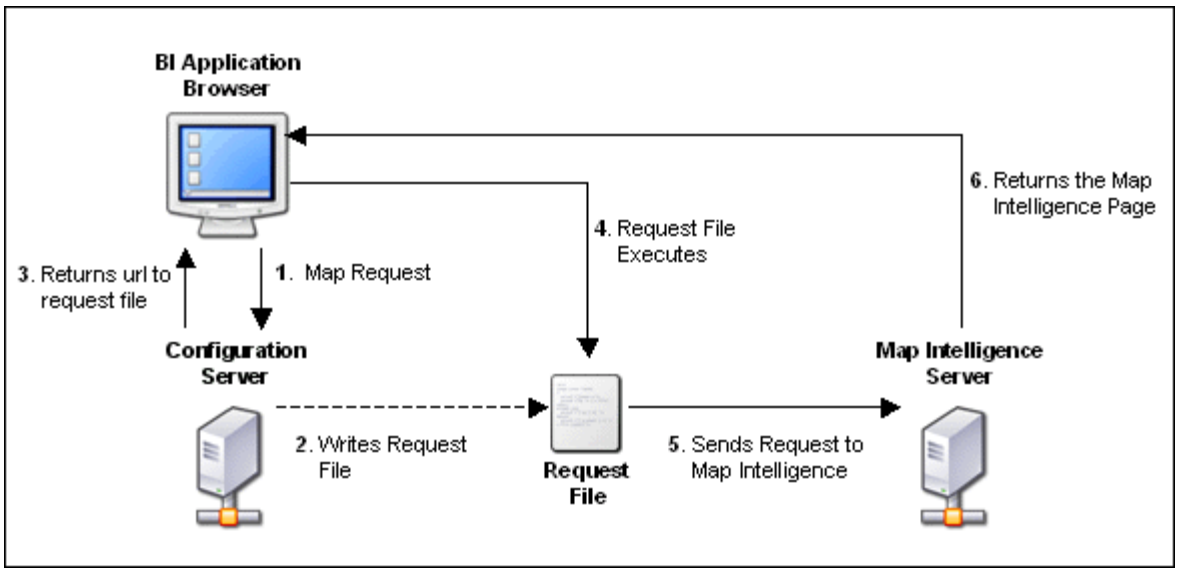


Figure 164. Method 1: With Splash Screen.

use-splash-screen = false

The request is sent as described by the following diagram. This is the most efficient route for the request to take. Some browsers however, have been known to have security issues with Javascript when using this method. Also, as the property name implies, a splash screen is not displayed when waiting for a map.

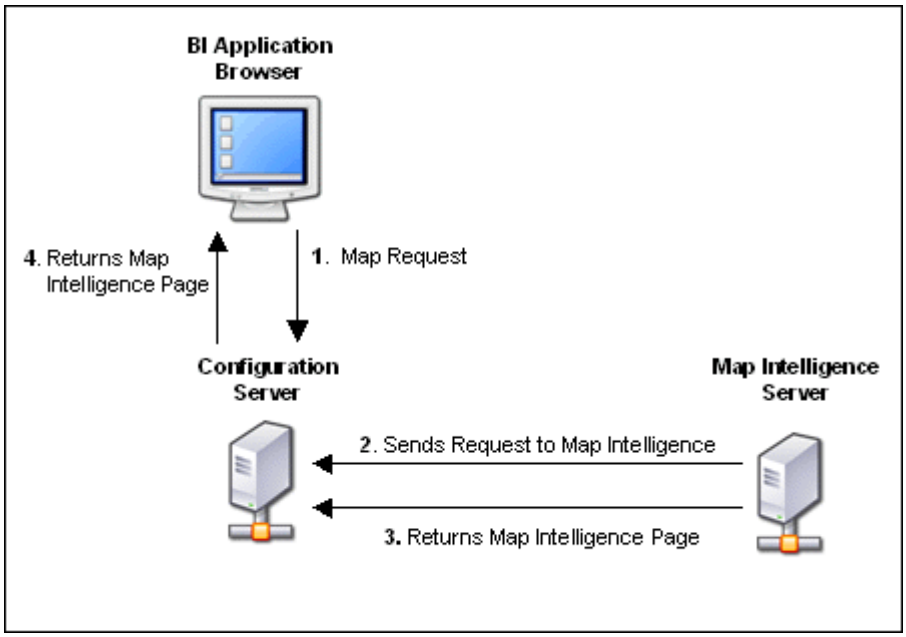


Figure 165. Method 2: No Splash Screen.

APPENDIX B: FEATURES RENDERING ATTRIBUTES

OPACITY OF COLORED CIRCULAR REGIONS IN RADIUS LAYERS

A number from 0 to 1 that indicates the opacity of all colored circular regions in radius relationship layers.

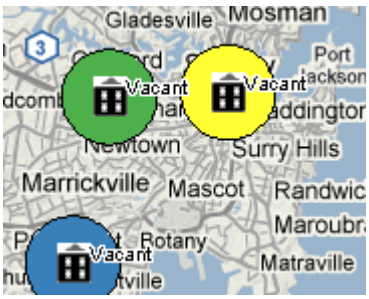


Figure 166. Opacity set to 1

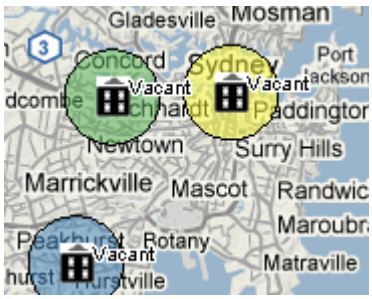


Figure 167. Opacity set to 0.5

Figure 168.Opacity set to 0.2

OPACITY OF COLORED REGIONS

A number from 0 to 1 that indicates the opacity of all colored region layers.

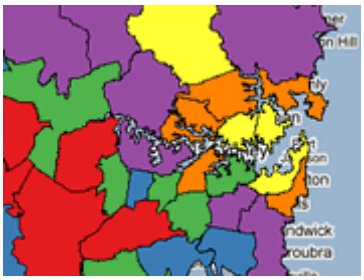


Figure 169. Opacity set to 1

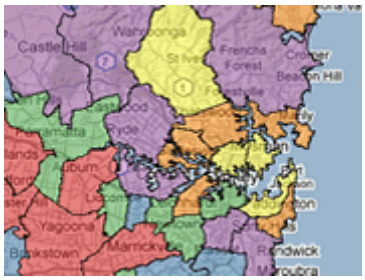


Figure 170. Opacity set to 0.5

Figure 171.Opacity set to 0.2

OPACITY OF HATCHES ON LAYERS

A number from 0 to 1 that indicates the opacity of all hatched layers.

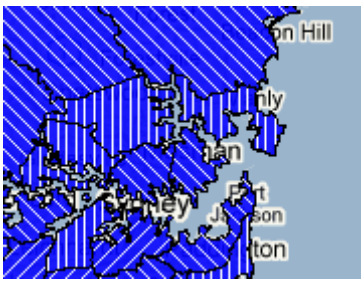


Figure 172. Opacity set to 1

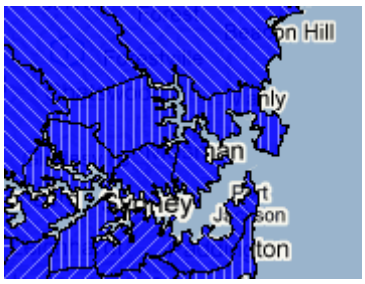


Figure 173. Opacity set to 0.7

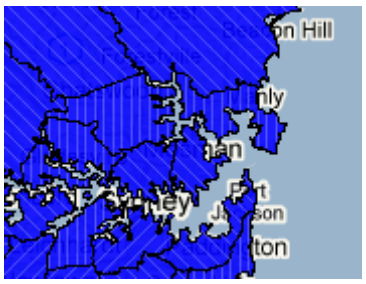


Figure 174. Opacity set to 0.5

COLOR OF HATCHES ON LAYERS

The RGB setting for the hatch color has a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

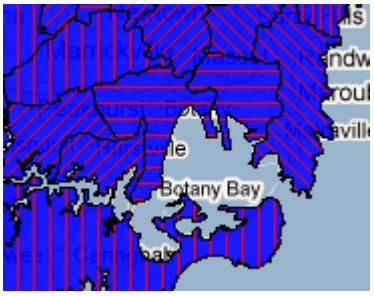


Figure 175. hatch color set to Red (FF0000)

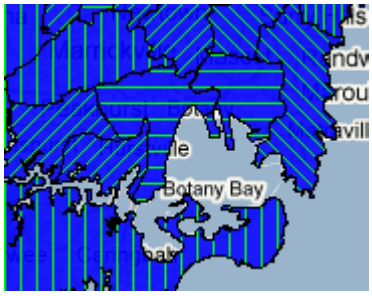


Figure 176. Hatch color set to Green (00FF00)

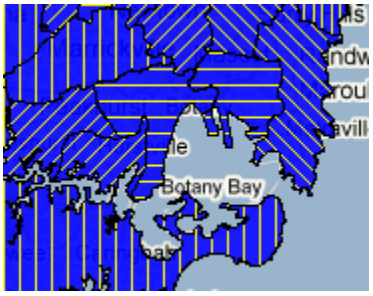


Figure 177. Hatch color set to Yellow (FFFF00)

OPACITY OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

A number from 0 to 1 that indicates the opacity of all the circular region borders in a radius relationship layer.

Figure 178. Border opacity set to 1

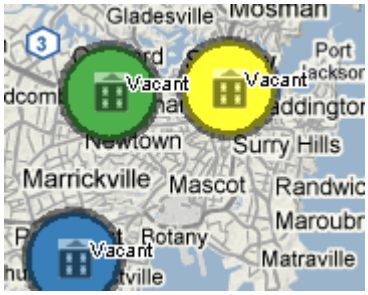


Figure 179. Border opacity set to 0.5

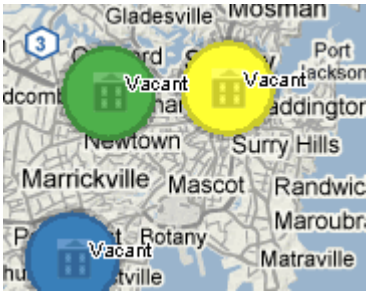


Figure 180. Border opacity set to 0.2

COLOR OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

Figure 181. Border color set to Red (FF0000)

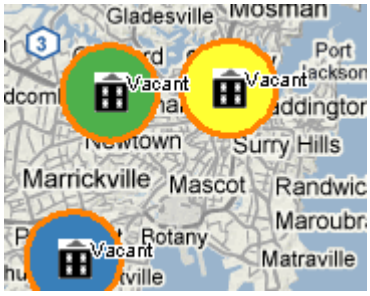


Figure 182. Border color set to Orange (#FF8000)

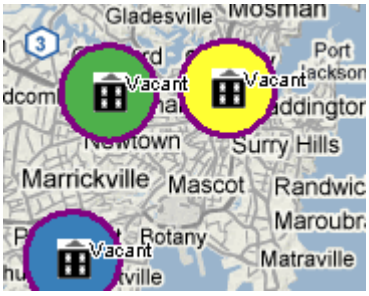


Figure 183. Border color set to Purple (#800080)

THICKNESS OF CIRCULAR REGION BORDERS IN RADIUS RELATIONSHIP LAYER

The thickness in points or pixels (depending on the GIS provider) of the circular region borders as a positive integer.

Figure 184. Border thickness set to 5

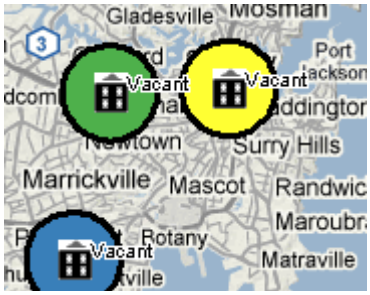


Figure 185. Border thickness set to 3

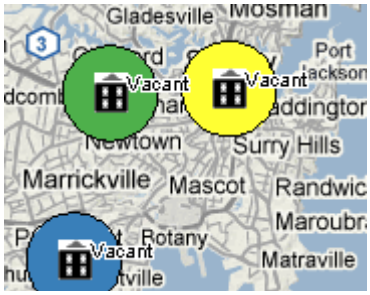


Figure 186. Border thickness set to 1

USE MAP BORDER ATTRIBUTES

If the **Use Map Border Attributes** option in the **Settings** section of the MI Server **Map Intelligence Tools** page, is set to **Yes** (the default) then, the map's attributes are used and any region border settings specified in the MI Client are ignored.

OPACITY OF REGION BORDERS

A number from 0 to 1 that indicates the opacity of all region borders.

Figure 187. Border opacity set to 1

Figure 188. Border opacity set to 0.5

Figure 189. Border opacity set to 0.2

COLOR OF REGION BORDERS

The RGB setting for the border color as a six hexadecimal digit (3 byte) number representing Red, Green and Blue. The default value is Black (000000).

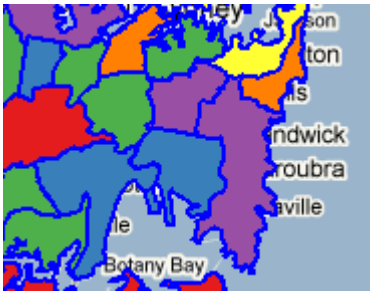


Figure 190. Border color set to Blue (#0000FF)

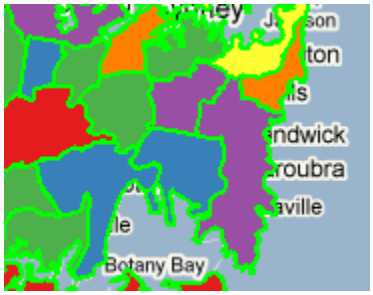


Figure 191. Border color set to Green (00FF00)

Figure 192. Border color set to White (FFFFFF)

THICKNESS OF REGION BORDERS

The thickness in points or pixels (depending on the GIS provider) of the region borders.

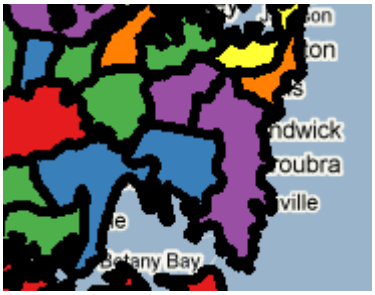


Figure 193. Border thickness set to 5

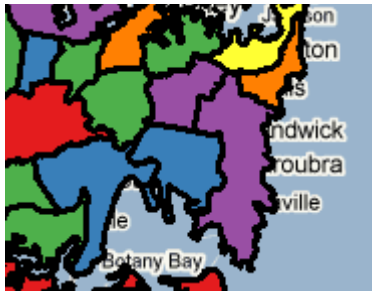


Figure 194. Border thickness set to 3

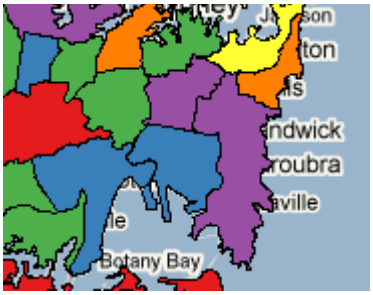


Figure 195. Border thickness set to 1

APPENDIX C: USING THE UNSHADED AND TRANSPARENT COLOR OPTIONS

REGION RELATIONSHIP AND AREA GROUP LAYERS

The following example shows the differences when using the Unshaded and Transparent color options for Region Relationship and Area Group Layers. The example uses crime data to color-code parks in Sydney, NSW, Australia, according to the type of crime committed either Theft, Vandalism or Assault.

Figure 196 shows a map of Central Sydney using the built-in Map Layers as shown in the Internal Legend. We can see that the underlying layer for **Australia** is pale green , the areas of interest to us are Sydney parks shown by the built-in layer **nsw_parks** .

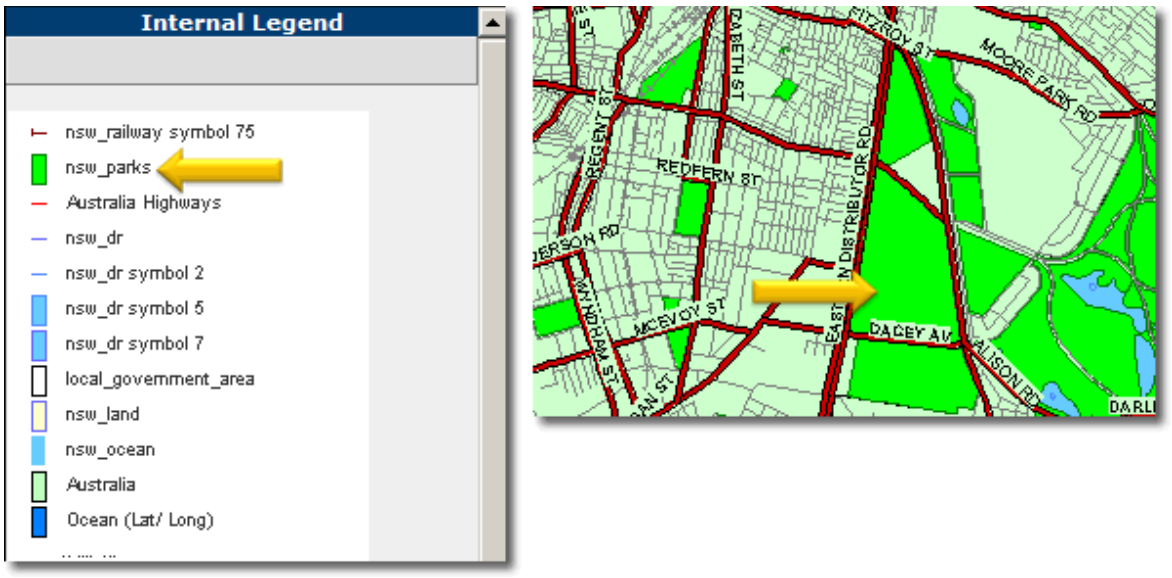


Figure 196 Built-in Map Layer – nsw parks

Using a Map Intelligence Region Relationship Layer, we have color-coded the *nsw_parks* built-in layer according to the Most Common crime type for each park. Theft is the most common crime in parks colored yellow, Vandalism= cyan, etc.

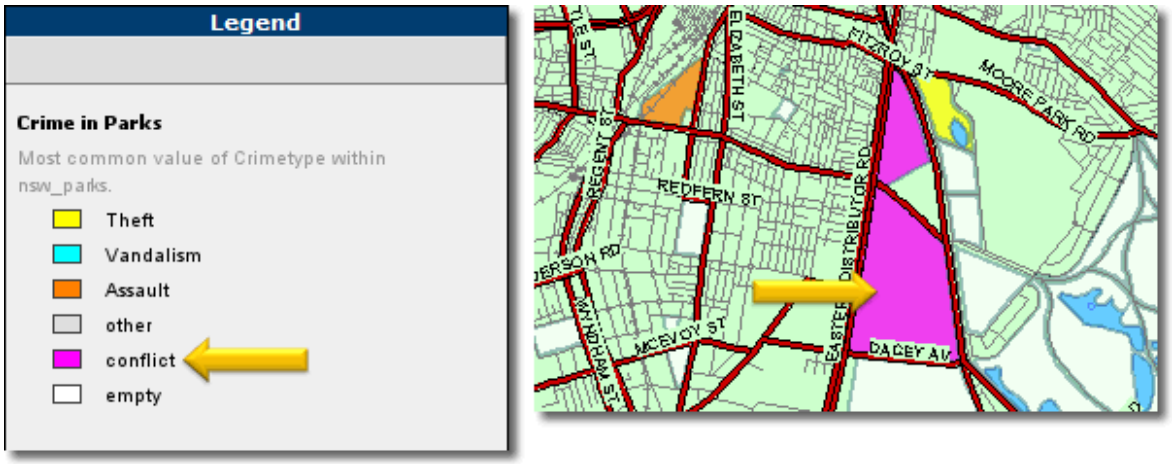


Figure 197 Map Intelligence Region Relationship Layer

Where a park has an equal number of crimes of the same type, this is shown as a "Conflict" and the park is colored Magenta .

Figure 198 shows the result for *Conflict* if we used the **Unshaded** option. You can see the parks that were once colored magenta are now unshaded, i.e. for these particular parks you see the original color-coding of the *nsw_parks* layer . Note that the other parks having no conflict crimes are still colored coded according to their most common crime type.

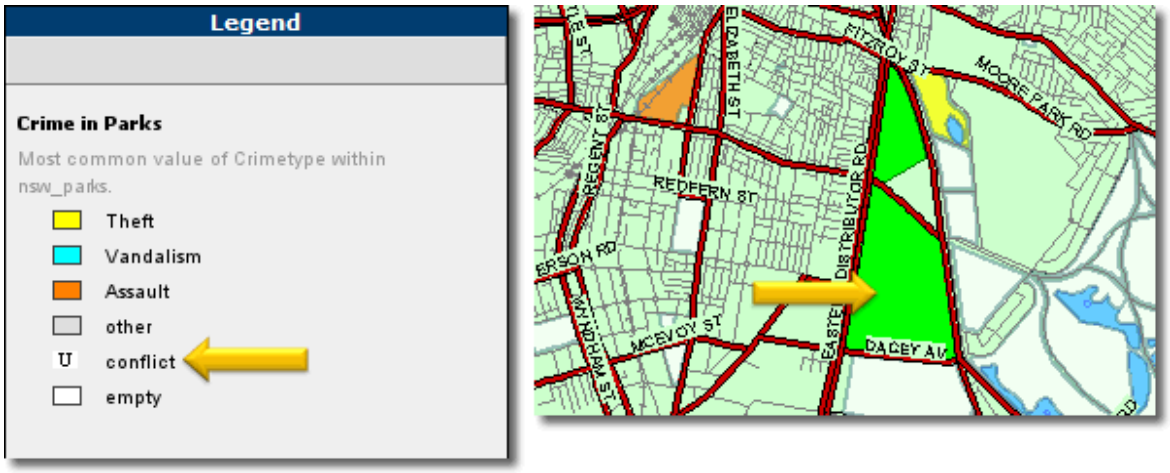


Figure 198 Unshaded option.

Figure 199 shows the same example, however this time the **Transparent** option has been selected for *Conflict*. You can see that the "Conflict" parks are not color-coded and the original color-coding for the *nsw_parks* layer for these particular parks is transparent, resulting in you seeing the underling *Australia* built-in layer . Note the other parks that do not have a conflict are still colored coded according to the most common crime type.

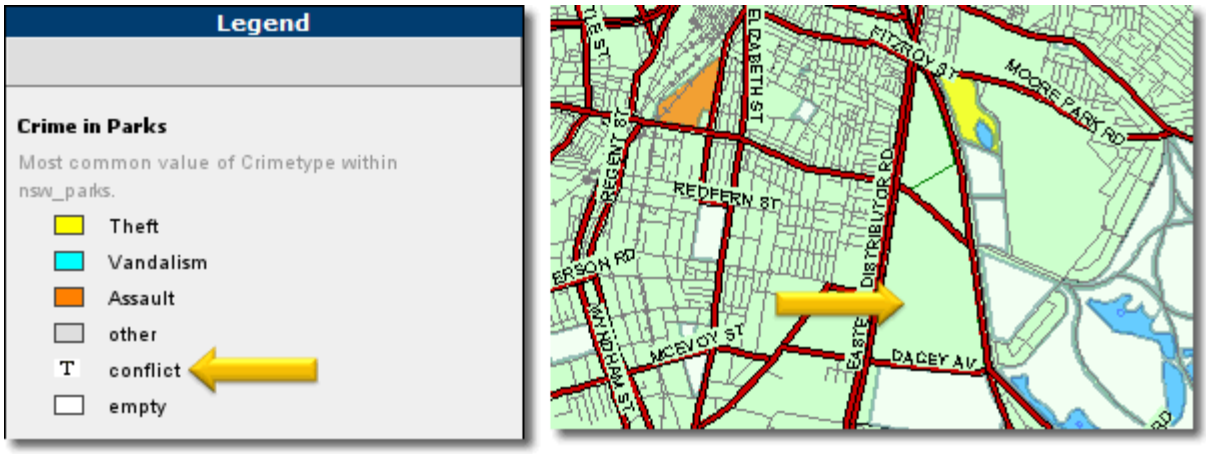


Figure 199 Transparent option.

RADIUS RELATIONSHIP LAYERS

The following example outlines the differences when using the *Unshaded* and *Transparent* color options for Radius Relationship Layers.

In this example potential new sites for Fast Food outlets 'Vacant Outlets' are shown as black buildings, around each 'vacant outlet' is a 3 km radius color-coded according to the most common Food Category of competitor outlets operating within the 3 km radius. Green circles indicate Burger outlets, grey circles Chicken outlets, etc. "Conflicts" are shown as Magenta as seen in Figure 200.

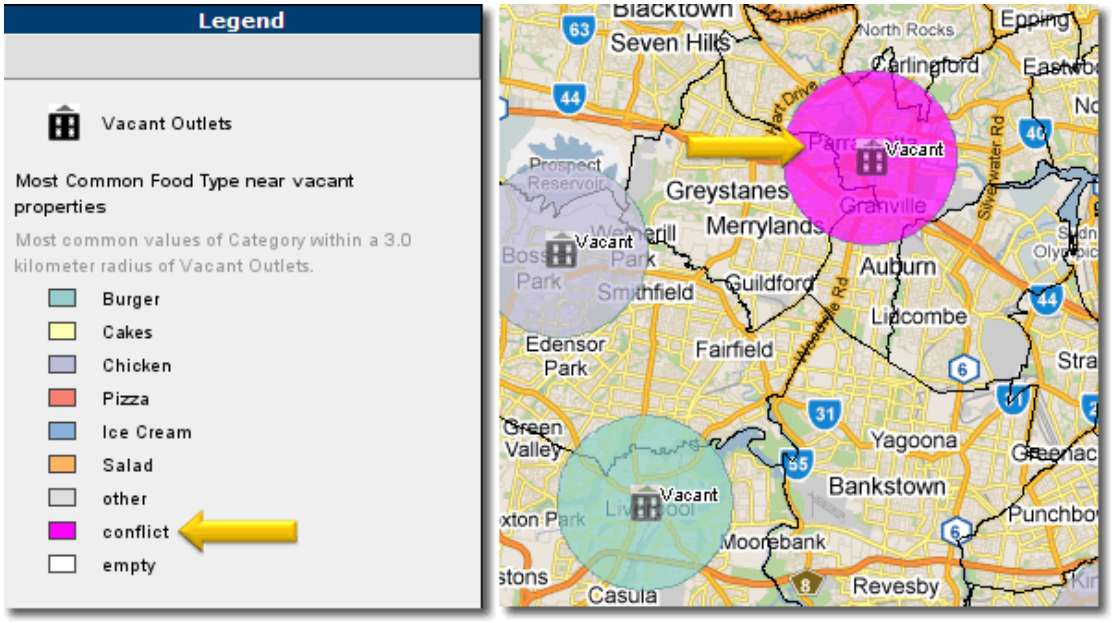


Figure 200 Radius Relationship Layer

If for *Conflict* the **Unshaded** option is selected, the circles are removed completely so that they do not appear on the map, nor can they be exported. Hidden circles do not have popup information (Figure 201).

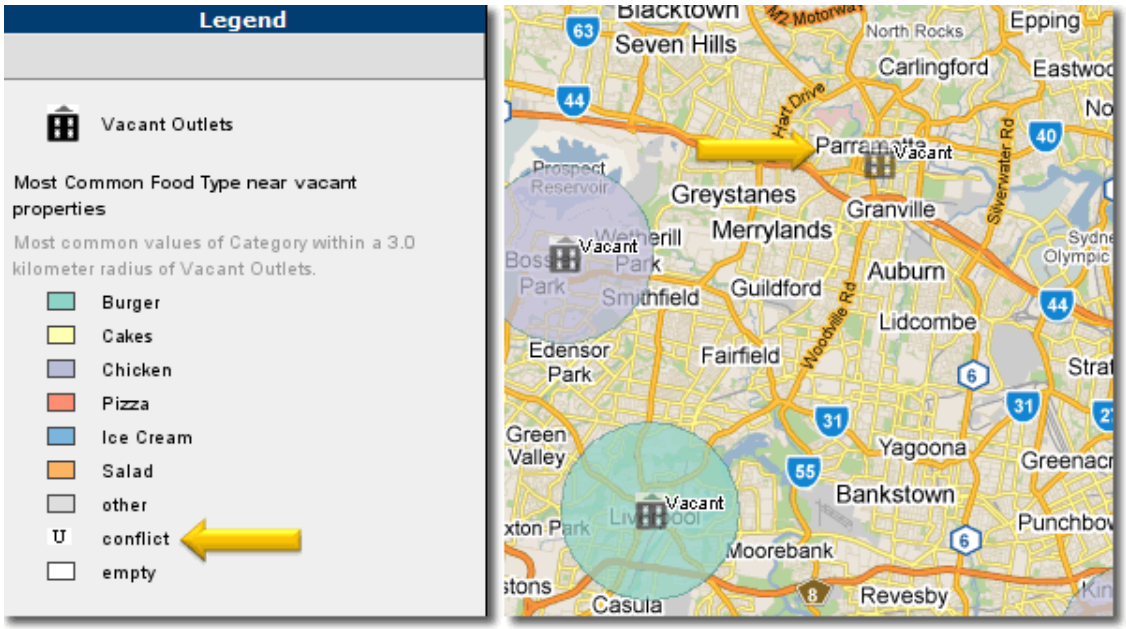


Figure 201 Unshaded Option

If for *Conflict* the **Transparent** option is selected, the circles appear 'see-through', except for a surrounding border. It will display popup information (Figure 202)..

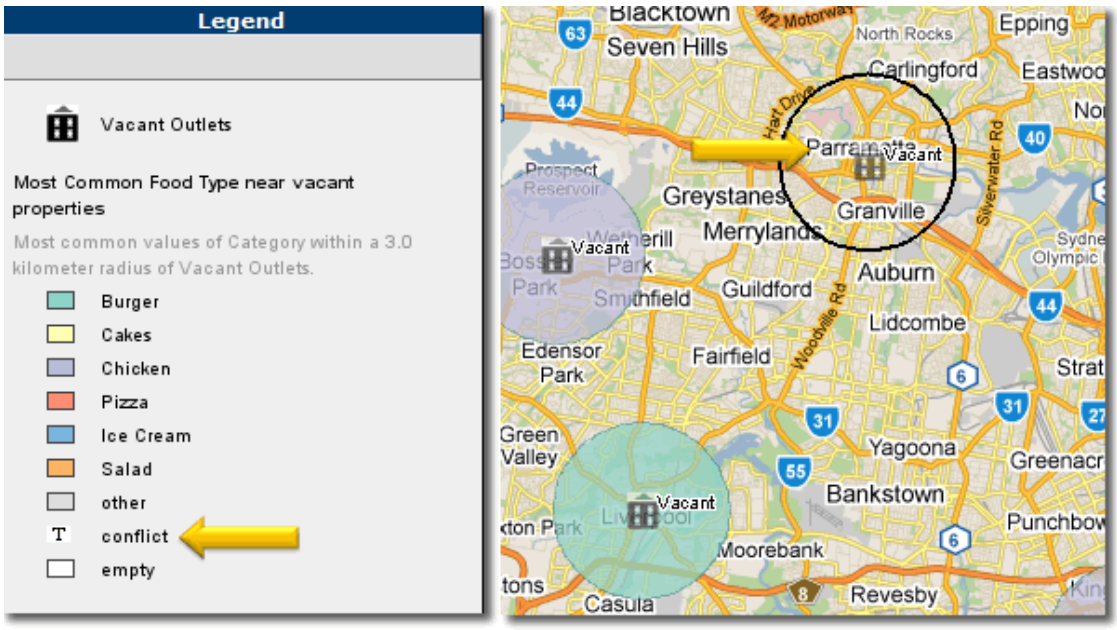


Figure 202 Transparent option.

APPENDIX D: NARRATIVE CUSTOM CODE

```
<form name="integeoForm" method="post" target="integeo">
  <div id="divIntegeo" class="minibuttonOn"></div>
  <input type="hidden" id="connToken" name="connToken"/>
  <input type="hidden" id="sessionId" name="sessionId" />
  <input type="hidden" id="server" name="server" />
  <input type="hidden" id="filter" name="filter" />
  <input type="hidden" id="documentId" name="documentId" />
  <input type="hidden" id="href" name="href" />
  <input type="hidden" id="pageName" name="pageName" />
  <input type="hidden" id="portalPath" name="portalPath" />
  <input type="hidden" id="appendFilter" name="appendFilter"/>
  <input type="hidden" id="prompt" name="prompt"/>
</form>

<script type="text/javascript">
var miclient = "http://obiee-server:9050/miclient";
var frm = document.integeoForm;
var dashboardName;
var button = "";

function addLoadEvent(func) {
        var oldonload = window.onload;
        if (typeof window.onload != 'function') {
          window.onload = func;
        } else {
          window.onload = function() {
            if (oldonload) {
              oldonload();
            }
            func();
          }
        }
 }

function getMap(){
//show filter button
button = "<a href='javascript:void(null)'
onclick='javascript:filterReport(false);'>Apply Selection Filter</a><br><br>";

frm.pageName.value = "@{dashboard.currentPage.name}";
frm.portalPath.value = "@{dashboard.path}";


 //recreate iframe
  document.getElementById("divIntegeo").innerHTML = button +
"<iframe name=\"integeo\" width=900 height=750 scrolling=no></iframe>";
 getFilter();
 frm.sessionId.value = GetSessionId();
 frm.server.value = "http://" + window.location.host + "/analytics/";
 //Analysis specific - uncomment the next line if using specific
 //Analysis and change the documentId value to the Analysis path
 //frm.documentId.value = "/users/weblogic/Singapore Crime Analysis Graph";
 // template Analysis - comment the next line of code if using Analysis
 //specific
 frm.documentId.value = frm.portalPath.value +"/" + frm.pageName.value;
 frm.connToken.value = frm.documentId.value + "-" + frm.sessionId.value;
```

Request Parameters for MI Client

MI Client Server

If Analysis specific, comment this line.

If Analysis specific, uncomment this line and change the value to *<analysis path>/<analysis name>*

```
 frm.href.value = window.location.href;
 frm.action = miclient + "/renderMap";
 frm.submit();
}

function getFilter() {
   if(typeof GFPGetPromptValues == 'function') {
     var filterValue = GFPGetPromptValues();
     frm.filter.value = filterValue;
   }
   else   //html print,get filter on cookie
     frm.filter.value = readCookie('filter');
     document.cookie = "filter=" + filterValue;
     frm.prompt.value = GFPGetPromptDetails();
}


function filterReport(appendFilter) {
  getFilter();
  frm.appendFilter.value = appendFilter
  frm.target = "_top";
  frm.action = miclient + "/selectFilterMap";
  frm.submit();
}

function readCookie(name) {
      var nameEQ = name + "=";
      var ca = document.cookie.split(';');
      for(var i=0;i < ca.length;i++) {
            var c = ca[i];
            while (c.charAt(0)==' ') c = c.substring(1,c.length);
            if (c.indexOf(nameEQ) == 0)
            return c.substring(nameEQ.length,c.length);
      }
       return null;
}

function GetSessionId() {
        var sessionId = readCookie('ORA_BIPS_NQID');
        return sessionId;
}

function GFPGetPromptDetails() {
    var nParamCount = 1;
    var sArgs = "";
    var tFilter;
    var op;
    var column;

    var tTables = document.getElementsByTagName("TABLE");
    for(var i = 0; i < tTables.length; ++i)
    {
        if(tTables[i].className == "GFPBox") {
           var tTDs = tTables[i].getElementsByTagName("TD");
           for(var j = 0; j < tTDs.length; ++j)
           {  if(tFilter = tTDs[j].getAttribute("GFPBuilder")) {
                 tFilter =
tFilter.substr(tFilter.indexOf("(")+1,tFilter.indexOf(")"));
```

```
                    var filterArr = tFilter.split(",");

                    if(filterArr.length > 0) {
                        op = filterArr[1].substr(1,filterArr[1].length - 2);
                        if(op != "prompted") { // all choices
                           column = filterArr[0].substr(1,filterArr[0].length-2);
                           column = decodeURI(column.replace(/\\x/g,'%'));
                           sArgs += "&P" + nParamCount++ + "=" + column;
                           sArgs += "&P" + nParamCount++ + "=" + op;
                        }
                    }
                }
            }
        }
     }
    return sArgs;
}

addLoadEvent(getMap);

</script>
```

GLOSSARY

Area Group Layer

Area Group layers correspond to existing areas on a map. The displayed theme is based on data attribute values, no spatial calculation is required. Instead, a column in your business data is designated to have values that match a column in the map data. For example, an existing map layer of suburbs may correspond to a data column for suburbs where the values are the suburb names. Then, for transaction data that represents customer complaints and that also contains a suburb column, it is possible to make a cross-reference between the transaction and the map area using the suburb name. An example that would use this correlation is displaying a theme on a suburb's area on the map that reflects the most common complaint type received from that suburb.

Built-in Layer

A built-in layer is defined by the map on the mapping server rather than the Map Intelligence Client. These layers may contain all types of feature such as lines, points and regions e.g. cities, rivers and parks.

Coordinate Systems

A coordinate system provides a frame of reference for measuring locations on the surface of the earth. A full list of acceptable coordinate systems is available in the *Coordinate Systems* document.

Data Columns

Data Columns are columns in a report that are sent to the Map Intelligence Server and have their values available in the Mapping Viewer. Data column values are displayed in the map data screen and popups that appear when you move your mouse over a point in the map. Data columns can also be used as fact or theme columns.

Fact Columns

A fact column is a data column that can have a string or numeric aggregation applied to it by a Relationship layer.

Hatching

Hatching is overlaying a pattern on top of a polygon allowing it to be distinguished visually rather than by using color.

Image Icons

Icons are used to visually represent points on a map. Icons can be symbols (image files) selected by the user or colored shapes.

Layers

A layer is a set of spatial features displayed on a map. Objects in a layer are usually grouped logically e.g. capital cities or parks. Each feature in a layer has the same set of data attributes, so a layer is in many ways like a relation (table) in a relational database.

Map Intelligence Layer

A Map Intelligence Layer is a layer defined in the Map Intelligence Client. These layers display data in a report geographic features on a map.

Map Intelligence Server

The Map Intelligence Server is the engine that takes requests from the Map Intelligence Client and Mapping Viewer and responds by displaying maps and associated information.

Mapping Viewer

The Mapping Viewer displays the layers configured by the Layer Designer on the specified map. The Mapping Viewer is viewed in a browser and provides controls that allow the end user to manipulate the map to return the desired analysis.

Point

A point is a geographic feature with a single pair of coordinates. These are used to represent objects or events e.g. house or accident locations.

Point Layer

Point layers are map layers where data is represented on the map as discrete point images or symbols. For example: a particular layer might represent the location of stores as push-pin icons and another layer could represent accidents as colored dots, where the color (theme) represents the severity of the accident. Typically, the rows in a table of data belong to a business concept such as people or address details, where each column is an attribute of that concept. Thus each row in your business data can be represented as an individual point in a point layer. In Map Intelligence, point layers form the foundation for relationship layers.

Radius Relationship Layer

Radius relationship layers are circular regions with themes around certain points of interest that show information about other points that fall within that circular region. These layers are generated by Map Intelligence. They are based on calculations made by Map Intelligence on the specified data values as specified by the layer designer. For example: different colored circles indicate the average house price within half a kilometer of a proposed waste plant. Another example is where different colored circles indicate the number of burglaries that have occurred within a five-mile distance of houses belonging to known burglars. In the current version of Map Intelligence, the circle center points (eg: houses belonging to known burglars) and the data being analyzed (burglaries), must be point layers.

Regional Relationship Layer

A Region Relationship layer corresponds to a map area of any shape that is solely geographical in its definition and not generated by Map Intelligence. Examples would be suburbs, zip codes, local government areas or police precincts. Region Relationship layers can be given themes according to specified data rules associated with the points that fall within that region. An example of such a theme could be color-coding precincts according to the number of crimes that have taken place within their boundaries, or applying different hatches to suburbs based on the total value of house sales that have occurred in each one. Map Intelligence works out in which region a point (eg: a sale or accident) physically belongs by doing a spatial calculation.

Relationship Layer

For further information see: Radius Relationship Layers and Regional Relationship Layers

Theme

A theme can be described as a representation of map features according to different associated values.